

NEWS JANUARY 2023







Gas replacement: "Induction has great potential in production processes"

Preview of GMTN Year 2023 with Till Schreiter, CEO and President ABP Induction

The year 2023 will be dominated by the leading trade fairs GMTN, and they will address the megatrends of our time – of this Till Schreiter, CEO and President at ABP, is certain. He explains which strategies he sees with a view to trends such as decarbonization, digitalization and demographic change, what he expects from GIFA and how global developments will affect ABP Induction's portfolio in the big interview at the turn of the year.

In your view, what are the topics that will occupy us not only today but also in the future?

Till Schreiter: We see several megatrends all driving us at once. There's decarbonization, with the associated issues of sustainability and the circular economy. That is a big block that is keeping us busy in the manufacturing industry. That's driven by digitalization – the second big issue. Then I see decentralization or also de-coupling - in other words, the big political changes, keyword China and shifting production to different regions to also reduce economic dependency. All the distortions such as the threat to supply chains due to trade wars and nationalism play a role here. These are big issues in themselves, and they have been fueled even more by the current crisis in Ukraine. Then I think of demographic change, which is leading to a glaring shortage of young talent. We are looking for strategies to get young people interested in our industry and to secure the knowledge of skilled workers.

Do current developments such as the crisis in Ukraine and Russia play a role in this?

Till Schreiter: Yes, overall you can say that certain developments and issues have been accelerated by Russia's invasion of Ukraine. One big issue is the uncertainty of energy supply and energy prices. This is a European issue, and especially from the German point of view, the current uncertainties are leading to investments being postponed, on the one hand. On the other hand, gas storage facilities are full, but this is partly because industry has produced less in some cases. Less production also means less capacity utilization in the customer environment and therefore, of course, less service business.

If there is anything positive to be gained from the energy crisis, it is the willingness to invest in energysaving measures. And digitalization also plays a role here: How can we use intelligent algorithms, artificial intelligence and the evaluation of collected data to operate plants more efficiently? This should also lead to energy savings in the production process. And that is the fundamental decarbonization: to energy that is not needed does not have to be replaced. Of course, always decarbonization the big question of what energy is available where in the world. There is no single answer to this. We have been discussing the topic of "green electricity and green hydrogen" intensively recently. Just think of the ongoing discussion about nuclear power, and the fact that it was declared green energy in the EU. Many European countries rely on nuclear power and this alone makes them less dependent on gas prices and the availability of renewable energies.

We consumed about 530 terawatt hours of electricity in Germany in 2021. We produce about half of that through green power. However, we need another 3,000 terawatt hours of energy that is not covered by electricity, which is currently mainly provided by fossil fuels. And these really must be replaced by green hydrogen or green electricity. That shows the challenge we face, especially when you consider that hydrogen is not available in mass quantities. For us, this means that we have to use green electricity precisely where we need it for immediate use and not use it to generate green hydrogen, which we then use in turn where we can also work directly with green electricity. This applies, for example, to the electrification of passenger car transport; hydrogen is more conceivable for long distances traveled by other means of transport with large loads, certainly primarily in freight transport.

However, this run on hydrogen also suggests that we should focus on electrifying everything in processes that can be electrified, instead of building large offshore wind farms to then use this electricity to produce hydrogen for the steel industry. In concrete terms, this means for the metalworking industry that everything that is fired by gas would have to be replaced by electricity. More than half of the gas consumed in steel production is used to reheat metal for rolling processes of all kinds. The question is, do we really need gas and hydrogen in all processes, or can't gas be replaced here, for example by induction? I see great potential for growth here, especially for us at ABP in the





metalworking sector....

... which, like many other traditional industry sectors, is affected by demographic change...

Till Schreiter: ...indeed, we observe this in the industry in many places. We have to live with the fact that industry does not always offer the most attractive and cleanest jobs, nor the most pleasant working hours. Accordingly, we see a greater turnover in the workforce for certain activities, which we need to work on. The big question here is also how specialist knowledge can be retained. It's also about experiential knowledge; this unconscious knowledge that has accumulated time. An experienced technician senses the approach to the solution so to speak through his empirical knowledge, whereas an inexperienced colleague must first think through various possible approaches to a solution before coming up with the appropriate step. To simplify this, we will need intelligent systems with knowledge databases, simplified control and better training options that keep this knowledge in the company or generate it time and again. Digitalization plays a crucial role here too.

At ABP Induction, we map this via the virtual academy, where training can be carried out on the virtual twin. Our myABP platform is a key control mechanism here, supporting skill management, where everything is stored digitally. Employees can practice actions over and over again and, incidentally, also act out situations that would be impossible to experience in daily life. It's like the principle of the flight simulator, which can be used to run through dangerous situations as a dry run, so to speak. And of course, the same applies to metalworking plants. Here, hazardous situations such as metal perforation, water bursting or bridge formation can be simulated - this cannot be trained in reality because of the potential danger.



Employees in training experience these hazardous situations virtually and also realize what happens when mistakes are made. This emotional learning can be generated in the virtual world. And what's more, employees from different parts of the world can train together in the virtual learning environment and learn from each other. They are networked and learn according to the same standards. Knowledge can be transferred throughout the global organization.

In your view, are these then also the guiding principles of GIFA 2023?

Till Schreiter: We will see a great many new approaches to these topics at the GIFA, METEC, THERMPROCESS and NEWCAST trade fairs: decarbonization will be a guiding principle, as will digitalization as an enabler. It will be very important that a face-to-face exchange be facilitated once more

after the coronavirus restrictions. We have already experienced this at the trade fairs this year: the personal exchange along with intensive discussions is extremely important, also for addressing topics in greater detail, exchanging opinions and developing ideas. That's why we expect a large number of visitors.

What will drive you at ABP besides these megatrends?

Till Schreiter: We will see competence shifts within the group. We will build up competencies that have yet to exist in this way, and we will also make volume adjustments. For example, I think 2023 will be a crucial year for our Ecoline. Here, we are just at the beginning of the rollout with the usual small teething problems that occur when a completely new product is launched onto the market. But in 2023, the EcoLine will become a relevant part of our business.

LinkedIn LIVE at the Digital Week in Dortmund

In the last week of September, the "Digital Week Dortmund" took place – and of course ABP Induction, as a digitalization expert for the metalworking industry, participated with several events.

There was a session in the ABP Virtual Classroom environment at beginning of the week. Markus Fournell and Robin presented Czarnetzki the virtual learning and working environment interested parties. At the end of the week, a LinkedIn LIVE event was scheduled, featuring a lecture and discussion session on the business platform LinkedIn. Markus Fournell presented the Industry 4.0 service solutions at ABP and invited an exchange. This session is still available on LinkedIn LIVE and can be viewed there again in full. Click here to see the presentation: https://www.linkedin.com/ feed/update/urn:li:activity: 6981613741406593024

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ANKIROS serves CO₂ reduction and digitalization trends

Expert knowledge extremely in demand at the ABP stand

Nearly 20,000 trade visitors came to ANKIROS 2022 at the TÜYAP Exhibition and Congress Center in Istanbul to meet and exchange information face-to-face again after the restrictions due to the coronavirus pandemic. ABP was on site with an over 50-square-meter stand staffed with an international team. The response was excellent.

This was of course also due to what ABP Induction was able to show at the stand. The eye-catcher was the Ecotop hood developed by ABP, which, by the way, can also be retrofitted to crucible furnaces of other furnace manufacturers.

The team also provided information about the new furnace of the year, the EcoLine line, which is the perfect solution for entry into the foundry market for small



companies, research institutes or even engineering companies that want to set up their own production. There was also extreme demand for ABP's digitalization solutions for foundry operations: the ABP experts were able to demonstrate how the myABP portal works and show the potential savings.



Yilmaz Yildir, Fikret Koc, Robin Czarnetzki and Alexander Keller formed the international team at ANKIROS 2022.





Controlling the foundry via smartphone

ABP digitalization team demonstrates possibilities at PROZESSWÄRME event

The "Inductive Melting & Casting" event, initiated by Vulkan-Verlag, also means "Digitalization at your fingertips" – the ABP team was able to make this possible in various workshop rounds together with partner Zorc Technology GmbH in the Ruhrturm in Essen in mid-November.

In "My Global Foundry", Robin Czarnetzki and Mick Ruppert from the ABP digitalization team gave a live demonstration of the customer information hub for the foundry, in "Energy saving at your fingertips", Stefan Andorf from the ABP diaitalization team showed how the ABP apps help to sustainably reduce energy costs," and in "ZORC Foundry Cloud," participants were able to simulate a foundry process themselves together with Wolfgang Baumgart from ZORC to identify metallurgical process improvements to increase production and reduce scrap rates.

Controlling the foundry via smartphone? No problem with ABP's digitization solution. The ABP team also presented these at the 12th "Inductive Melting and Casting"



Robin Czarnetzki presented the myABP platform in live operation.



Stefan Andorf from the ABP digitalization team showed how the ABP apps help to sustainably reduce energy costs in foundry operations.

conference. Markus Fournell, VP Service Products & Digitalization, and Dr Marco Rische, Director System Business, talked about the idea behind #ENTERABP with the smartphone for the foundry.

Wolfgang Baumgart from ABP partner Zorc Technology GmbH presented his ideas for increasing efficiency through digitalization. Markus Fournell also spoke in another slot about predictive maintenance as success factor, taking into account the opportunities from digitalization and Industry 4.0. Dr Marco Rische presented ABP's concepts for replacing the #upolofurn with induction furnace technology, and ABP CEO Till Schreiter finally provided an important impetus on the second day of the event on the two megatrends digitalization and decarbonization.



Markus Fournell spoke about the idea of #ENTERABP.

A video summary of the event can be found on ABP Induction's YouTube channel (click here).





ABP equips AYD with innovative induction technology ...

... and everything it requires for fully digital production

The cooperation between AYD **Automotive Industry and ABP** Induction is a true success story with good prospects for the future: The Turkish familyowned company, a global leader in the automotive sector for the production of steering and suspension parts, will in future rely on ABP Induction's innovative induction furnace technology for the production of brake discs. The factory in Konya, Turkey was equipped with modern mediumfrequency induction furnaces of the IFM 6 type, furthermore with an OCC-type casting furnace with the OPTIPOUR® system developed by ABP. AYD additionally relies on the potential offered by ABP Induction's Industry 4.0 innovations: The myADP digitalization package for foundries is part of the new production. It consists of the myABP portal, connection to ABP Intelligence and to the remote service module ABP digital Expert on Demand, as well as access to the virtual academy for employee training independent of their location.

AYD supplies its customers with premium quality and a product range for passenger cars, light commercial vehicles and vehicles designed to transport heavy loads, making the company a global leader in the automotive sector. The company is known for its design and innovation technologies,



especially with respect to the development of complete solutions for safety-critical parts in vehicles. In this regard, AYD sees itself as a one-stop provider for complete solutions, offering its customers everything from a single source.

This attitude was also decisive for ABP, as this overall package of innovative induction furnace technology for melting and casting, the option of complete digitalization of the plant for Industry 4.0 applications and the local service center convinced AYD. Thus, the industry leader in the automotive sector gets all components relevant for production from a single source – from ABP Induction.

It took about one year from the conclusion of the contract on November 2, 2021 to full commissioning. The complete equipment, including the melting and casting furnace systems, was delivered to Turkey and directly assembled in June and July 2022. Cold commissioning was undertaken in late September 2022, followed by hot commissioning one month later, including a test run for the melting furnace. Hot commissioning and test run for the casting furnace will follow afterwards.

ABP Induction has delivered two medium-frequency induction furnaces of type IFM 6 (8.4t) and 4,800kW / 250Hz TWIN-POWER® supply. In addition, there is the







casting furnace OCC 50.2 with a useful capacity of 5,000kg and inductor power of 300kW. The automatic CIP positioning module and the OPTIPOUR® control system are the technical highlights. AYD is now able to use a high-speed molding plant at full capacity. With the OPTIPOUR® meniscus control system, the filling level is measured using an intelligent camera; this prevents overpouring and underfilling of the mold, reduces slag inclusions and saves iron.

The environmentally friendly operation of the ABP induction furnaces of type IFM is based on different modules. The converter power can be freely distributed to both furnaces using the TWIN-POWER® principle. This enables

scenarios like melting with one furnace and simultaneous sintering or holding with the other one. The principle involves an increased degree of utilization of the converter, lower maintenance costs and lower investment costs compared to separate energy supplies.

The potential for adaptation to the possibilities of Industry 4.0 are excellent with the melting processor PRODAPT® Enterprise and the ABP customer portal myABP, allowing for intelligent solutions for the progressive digitalization and networking of the processes at AYD. The melting processor PRODAPT® Enterprise controls the energy supply for the melting and holding process, for cold start and sintering according to the demands. Operational data and conditions are captured and displayed in the myABP portal, and prepared for targeted data exchange with the plant management system. In addition, the technical furnace parameters are captured via the digital converter control. When starting up a batch with partial filling of ferromagnetic melting material, small portions of this material are automatically refilled. This leads to measurable energy savings and increases in production

as compared to non-controlled batching. Surveys show that induction furnaces produce less than half of the CO2 emissions to melt one ton of cast iron compared to cupolas. Thanks to the ABP equipment, not only AYD will benefit from this, but also the environment. The melting furnaces thus offer the well-known stable and high efficiencies and in addition have all the safety features to enable reliable and safe production. This includes the modules known from the ABP Safety Packages, which are standard for all new ABP plants. The "ABP Basic Safety Package" is a vital form of basic protection for existing plants. The package consists of the GD 05 ground fault monitor, the diagnostic function for GD 05, an extended GD 05 ground fault monitor for TWIN-POWER® systems, the LCM leakage current measurement, the hedgehog coil and the test bath earth.

After this project, ABP plans other development projects on site: AYD Automotive Industry is a very innovative, progressive company with whom new ideas for innovative products and solutions can be developed, including in partnership and cooperation with AYD suppliers for the production lines.







ABP brings out the highlights at Hüttentag

Potentials of induction demonstrated at the steel industry get-together

340 participants as well as 26 exhibitors and sponsors discussed the steel industry in the energy and climate change on November 17 and 18 in networking talks, but above all in technical presentations, keynotes and panel discussions in the eastern glass foyer at the Messe Essen. In light of the many pressing questions and challenges, the organizers had scheduled two days for the annual meeting of the steel industry for the first time. ABP was also represented in the steel industry with two presentations on the advantages of induction technology.

Induction and digitalization as a strong alliance towards a climate-friendly steelworks – this is what ABP CEO & President Till Schreiter focused on in his keynote at the Hüttentag. He spoke on stage in the glass foyer about the prospects for a climate-neutral steel industry using induction technology, which offers great potential in a wide range of application scenarios.

Dr Marco Rische, Director System Business at ABP, spoke about induction heating as a contribution towards CO2 neutrality in the steelworks and rolling mill. This topic obviously struck a chord with visitors, because the lecture hall was almost completely filled.

And it's no wonder: with induction, the energy input is achieved directly via the electromagnetic field into the material to be heated. The process is dynamic, easily controllable and, if green energy is used, almost CO2-neutral. Both in the melting process and in the area of reheating, the established processes can thus be complemented and thereby reduce the emissions of the overall process. The hybrid addition of induction heating systems not only improves the emission behavior in the overall



ABP CEO Till Schreiter presented his ideas on induction and digitalization as an alliance for a climate-friendly steelworks.





Dr Marco Rische spoke in his presentation about induction heating as a contribution towards a CO2-neutral steelworks.

process at manageable investment costs: Due to lower burning rates of the aggregates and an extremely good stirring effect during the melting process, the process is excellently suited for melting aggregates at the lowest possible energy consumption

with good mixing of the target analysis in the melt.

At the stand in the glass foyer at the Hüttentag, the ABP team provided further information on both days and was able to hold many exciting discussions there.





The great clean-up

After the flood disaster: ABP Induction repairs extreme water damage to the heating system in just a few weeks

Basically, it is quite an idyllic place where the halls of Schmiedag Hagen in (Germany) are located. To the east of the factory site, on the opposite side of the main road B54, you head towards Hagen city center, and to the west of the site you go up to the wooded Philippshöhe. The factory site is divided by the Volme creek into a western and an eastern part, several bridges lead from the entrance area with the administration buildings to the western part with the forge.

On July 14, 2021, the idyllic location turned into a disaster: During the massive storm that hit North Rhine-Westphalia that day, a flood situation arose that within a very short time had caused the Volme to swell – until it finally burst its banks and flooded the plant site with all its machinery, equipment and facilities. 17 employees were forced to take refuge on a hall roof and hold out there during the night – it was the last resort.

A little more than a year later, the site is once again bustling with activity. Visually, almost nothing reminds



The fully restored heater is waiting for the return journey.

one of the catastrophe a year ago, and the ABP Induction heater is also running smoothly again. This, too, was covered with water following the catastrophic storm. After the water had receded, the equipment was salvaged, cleaned and overhauled by ABP, who then handed the upgraded system back to Schmiedag. Until then, however, the Hagen-based company had to cope with a few critical and lifethreatening weeks.

Looking out of the window in the meeting room of Schmiedag's administration onto the Volme, it is hard to believe what authorized signatory Detlev Müller recounts about the dramatic hours from July 14 to 15, 2021: "Due to the continuous rain, the Volme rose steadily and was already just below the bridge in the afternoon. Then I went over to the forge for a check, and when I came out of the hall again about half an hour later, the water was already flowing over the bridge decking." Müller went back to the hall, had the production stopped immediately and evacuated all employees. 17 employees did not make it directly, Müller was one of them. The main escape route from the factory premises, the underpass to the B54, was flooded; the vehicles of the factory staff, which were still in the employee parking lot were lost. "When the water was about 30 centimeters on the site, I instructed everyone to climb onto one of the employee offices, where we could have used ladders to reach the roof of the hall in an emergency. Anything other than entrenching ourselves would have been too dangerous, because the water was coming from all sides and the current was unpredictable, with a tremendous flow speed."





It was not only the water that proved problematic, but also the flotsam on the Volme, which was carried along by the masses of water and collected at and on the bridges on the plant site. The southernmost bridge with the most flotsam acted like a dam that could break at any time, so that even more water could have flowed uncontrollably toward the factory buildings in one fell swoop. "Meanwhile it was dark and if flotsam then breaks loose and is heading towards you, there is practically no escape. It was therefore clear to us that we had to spend the night on the factory premises, because any further attempt to escape would have been too dangerous. In the end, the water stood at a height of about 1.90 meters above the floor of the halls." This meant that all the facilities were



After the disaster in Hagen, the heater is recovered and made ready for transport to ABP.

also flooded. The team on the site had acted with foresight and deenergized the entire plant: "The electricians naturally think ahead in such situations, removed all the main switches and cut off the power supply, which subsequently turned out to be an advantage when it came to damage limitation and reconstruction", Müller explains.

The team around Detlef Müller that remained on the premises was rescued by boats from the German armed forces early in the morning. Müller met later with a team to sound out the situation and check whether the site could be reentered. "The water is one thing, but when it had receded, everything was full of mud – everywhere. And we had to deal with dust, for weeks, settling everywhere." ABP's warmer was also affected, was full of water, mud and residue.

The future of Schmiedag was hanging by a thread in this situation, as the technical manager of the Schmiedag GmbH, Heinz Klenen, explains: "If nothing works at all, neither electricity nor IT, and all machines are affected – then this was basically a total loss." However, the company benefited from being

part of the Georgsmarienhütte Group. "The colleagues were able to help quickly – we moved products to other locations, were able to use resources such as experts, or the group's own company fire brigade, which was able to supply us with lots of material that we didn't even have here – from shovels to wheelbarrows to pumps," explains Detlef Müller, "the colleagues came at the weekend, pumped out and set up construction dryers." The motivated team both in the group

and at the Hagen site contributed a lot to the fact that Schmiedag was able to resume production comparatively quickly.

The colleagues from the group were also able to help with the power supply: For electrical switchgear and power feeds, a site from the group could help that had similar equipment as needed by Schmiedag. This allowed for much faster restart than if a completely new feed had been needed. With the help, high voltage could be brought to the site in late August 2021 and the first plant could go back into operation. "With all the misfortune, there was also a lot of luck", explains Heinz Klenen, "with the available replacement machines, for example, quick help from the other plants, and the fact that we were just in the repair phase and had shut down the furnaces. All tempering furnaces were out of operation much more could have happened if they had been running in full operation at high temperatures. They cannot be shut down in half an hour, especially since there was no warning whatsoever that such a flood disaster could hit us, and not even at short notice that masses of water were moving towards us."

ABP Induction, too, was able to contribute to the quick return to normality. The ABP heating system



After the overhaul, it's back to Hagen.

type EBS 460 WK installed at Schmiedag was affected by the flood. A large part of the heater had been under water and was damaged and dirty after the water receded. An ABP team inspected the plant in November 2021 and prepared a quotation for a comprehensive modernization of the heater. Practically, all the relevant components of the heater had to be replaced and renewed, starting with the feeder panel with circuit breaker and fuses to the four IGBT converters with mains chokes, coupling choke, control boards and fan including control panel. All current transformers, voltage transformers and insulation monitoring were also affected, as well as the drive cabinet with all frequency converters and the control panel.

"As the old hardware was no longer available, new, up-to-date Siemens hardware was used. The program was upgraded to TIA. As a result, the control technology of the heating system is now again on a par with that of a new system", explains Dr. Marco Rische, Director System Business at ABP Induction. ABP was also able to respond to special requests for the reconfiguration of the plant. The withdrawal at the heater was to be changed from an inclined lift to a robot withdrawal in the course of modernization. For this purpose, a coupler module was used to provide communication and signal transmission to the robot. The engineering also had to be adapted. To this end, ABP supplied a second light barrier so that block adhesives can be detected more efficiently.

The heater was brought to the ABP plant in Dortmund and completely refurbished. It had been completely overhauled already by mid-March 2022 and could be delivered to Schmiedag again. "It was important to us to help quickly and without complications and to improve the system in all possible places during the modernization. Today, the heater is as efficient as

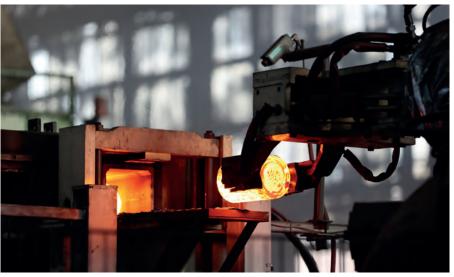


The plant is running!

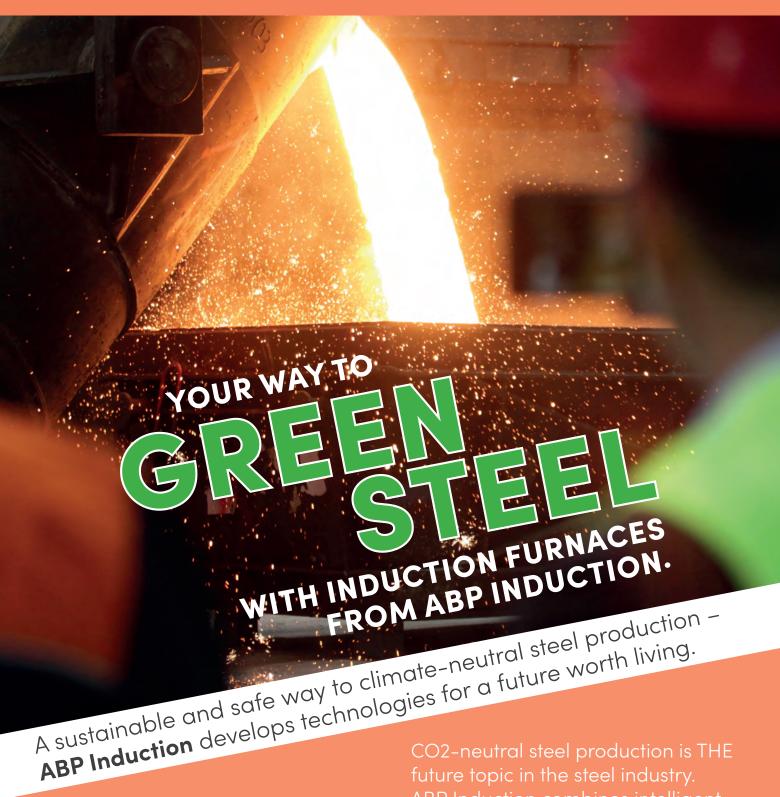
a new system", explains Dr. Marco Rische. Aspects such as variability and energy consumption also play a role. The heater is appropriately tuned to loading and unloading, the operation is optimized in terms of energy, and due to the introduction of the robot unloading, also for throughput.

The other systems and equipment at Schmiedag were also put back into operation step by step. The backup server with all relevant operational and customer data, for example, was well protected. "Fortunately, we had planned the server's position so that it remained above the water surface." This helped to resume operations: "Nothing would have worked without the data."

Even long-time employees cannot remember such a similar disaster: A colleague in the maintenance department has been here for just under 45 years now and had never seen anything like this. You cannot deliberate on every scenario. But we are now differently prepared for possible cases in the future with the knowledge we have today.



The heating system from ABP Induction was directly expanded during the new installation - for example, to include removal by robot.



CO2-neutral steel production is THE

ABP | PEOPLE. TECHNOLOGY. SUCCESS.

ABP Induction combines intelligent technologies that enable climateneutral production - and thus the "green steel" for a competitive and environmentally friendly future. Learn more about induction technology, features such as the predictive TWIN-POWER® system, the intelligent PRODAPT® melting processor – and the many digital solutions that optimize your production processes at www.abpinduction.com.