

concrete 23 | compact

WASA COMPANY MAGAZINE

NEW WETCAST PRODUCTS | 15 years of innovation

DR. ARNO SCHIMPF | Always looking to the future!

CLIMATE AND ECOLOGY | Sustainability at WASA



Competence Leadership.



DEAR READERS,

When I sat down last year to write the introduction for the 2022 edition of concrete, the recently-begun war in the Ukraine was dominating the headlines. A year and a half on from the beginning of the Russian invasion, the war in the heart of Europe is still raging. It has disappeared from the front pages, yet the challenges it brought are still with us: the dependency on Russian gas, lost markets, higher inflation and increased raw material prices, to name just a few.

For WASA, times like this remind us what we are particularly good at – adapting to changing conditions, making decisions and putting them into practice.

That has led us to expand our storage options so we can stockpile the most essential raw materials, ensuring that we can produce without interruption. We have also replaced energy-intensive cooling systems by acquiring our own well. Energy contracts are supplemented by direct purchase on respective markets, while the use of secondary raw materials has also been accelerated. All these measures mean that we do not have to pass on the full price increases to our customers.

Learn about these topics and many more in the new edition of concrete. I hope you enjoy reading it!

Yours, Matthias Bechtold
Chairman and CEO of WASA AG







02	Foreword
06	Contents
08	Vertical integration at WASA: Everything in-house
16	New WETCAST products: 15 years of innovation
22	Dr. Arno Schimpf: Always looking to the future!
26	Research and development at WASA: It's a matter of expertise
32	Sven Beisel: Balance without monotony
34	Betonwerk Pallmann: Trust pays off
38	Climate and ecology: Sustainability at WASA
42	Florian Müller, IAB: The concrete factory of the future
46	Daniela Schlauraff: The best results every time
48	WASA WETCAST: Wetcast in its most beautiful form
61	Outlook and imprint



REPORT ON VERTICAL INTEGRATION AT WASA

**Everything
in-house**

Thanks to prudent planning and well-thought-out strategies, WASA today has the great privilege of completing many diverse in-house production processes. This allows the company to make decisions and act autonomously to a large extent, even when it comes to more complex processes. In addition, WASA can call on a range of strong partners – some of whom have been on board for many years – to contribute their expertise precisely where it is needed.

WASA develops the process technology needed for its in-house production. To this end, it has entered into a large number of cooperations with various universities and specialized research institutes.

Once the required process technology has been determined, the production plants are developed in close cooperation with the respective suppliers. WASA's design department creates detailed production drawings to accompany the implementation of the projects. The WASA CONSTRUCT division can also design special components, such as various sealing lips or other special parts made from polyurethane. On top of this, the five-axis milling machine enables the company to manufacture any aluminum components required in-house. This high level of vertical integration allows WASA to develop complex manufacturing processes quickly.

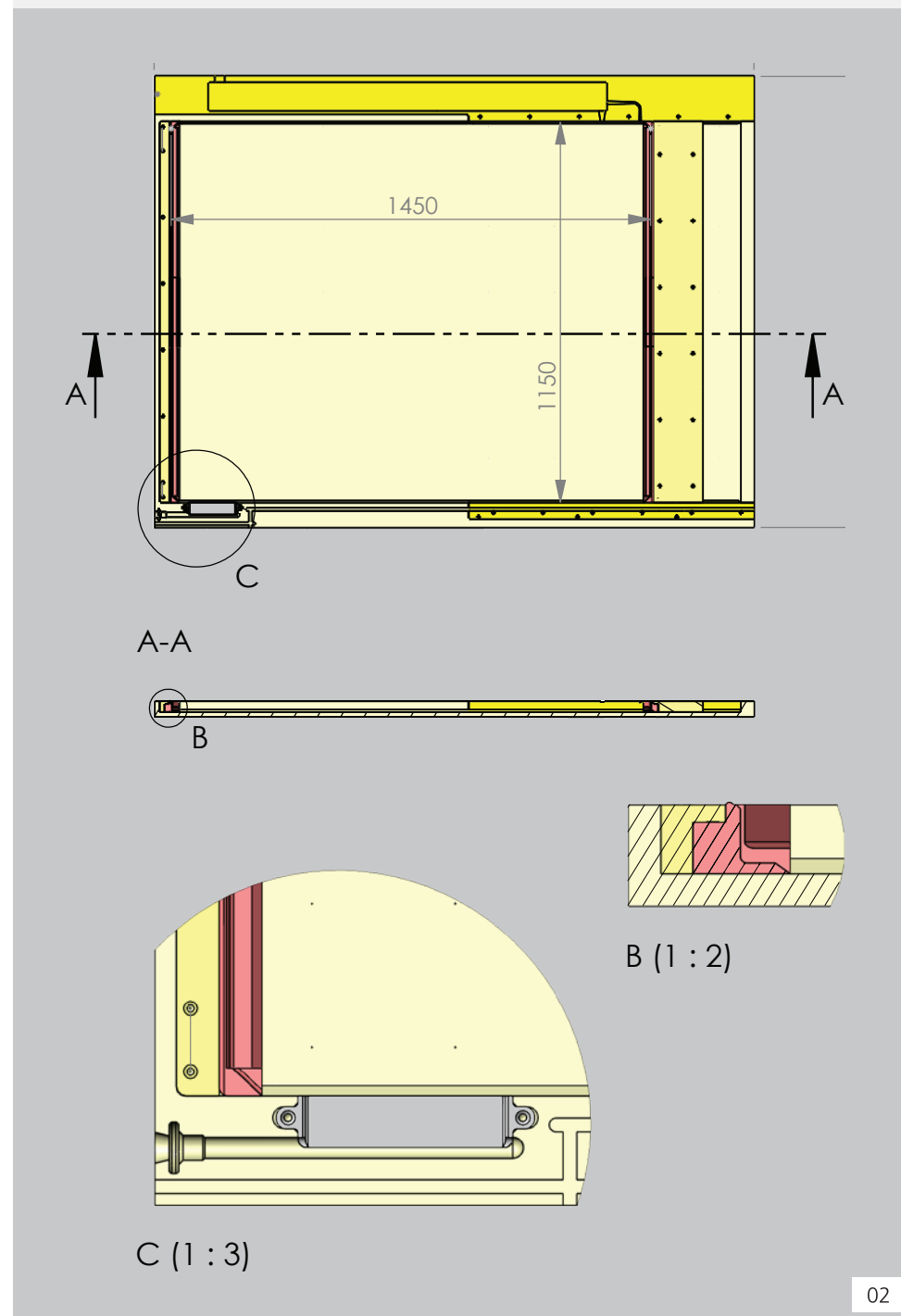
WASA has the greatest wealth of experience when it comes to manufacturing all-plastic boards, having built its first plant for producing WASA UNIPLAST® back in 1991. Since then, the world market leader in production boards has been continuously improving and refining the concept in order to further raise the throughput rate and quality of its products.

The fourth plant for manufacturing WASA UNIPLAST® ULTRA boards was finally put into operation in January 2023 – following delays caused by the COVID-19 pandemic

and the war in Ukraine. Just a month later, it was already one of the best-performing plants that WASA has ever built in terms of throughput. The new production line is equipped with 14 completely new molds. One unique aspect of the current plant is its climate-neutral cooling system, which draws cooling water from a well.

During the plant modifications, the way the raw material is stored in silos and the plastics are transported from the silos to the equipment halls was completely revised. A new control and operation system was implemented here – a necessary step, as the addition of another plant took the existing systems to their limits.

The manufacturing process itself is virtually identical in all plants: The injection mold specially prepared for the respective board docks with the plasticizing unit and is connected to form a positive fit. The number of steel molds used depends on the size of the order. The plasticized plastic mass is injected into the steel mold. Depending on the size of the board, this takes around five to ten minutes. The interior dimensions of the molds are adapted in line with the customer's board size in advance. After filling, the mold is removed from the injection molding machine. It is then circulated through several cooling stations, bringing the plastic to room temperature. The plastic boards are then removed from the mold and forwarded to Quality Control, where every board is weighed and checked



“Special parts for the company’s own production plants can be manufactured quickly using its own five-axis milling machine.”



03

for evenness and dimensional accuracy. Once the board has passed the quality inspection, other customer-specific features are applied, such as chamfers and edges.

Although the manufacturing process has not generally changed over the years, it has frequently been refined and improved.



04



05



07



06

WASA WOODPLAST

In 2019, consistently high demand and growing customer requirements spurred WASA's Executive Board and shareholders to invest in a new and almost fully automated plant for producing the established WASA WOODPLAST®. Because the wooden core is produced by WASA in-house, the company is flexible in its choice of wood and has complete control in terms of quality assurance. By the end of 2022, the new WASA WOODPLAST® plant had already been commissioned.

Products are now transferred from wooden core production to the coating unit in a fully automatic process during which the mold weighing 1.2 metric tons is filled by a robot at the flip-top molding station.

The special feature of the molds is their inlays – made from aluminum and polyethylene, they are held against the molds using magnets. This mold technology has allowed WASA to considerably increase the maximum size of its boards and slabs: Concrete block plants can now produce slabs in dimensions of up to 1750 x 1400 x 60 mm. At a wetcast plant, widths of up to 1524 mm are even possible.

What makes the technology here so special is the production process. The softwood core is first placed in a twin-casing aluminum mold,

before being moved into the pressing chamber. The locking force required to coat the wooden core is generated by a specially developed bellows. This technique can generate locking forces of over 100 metric tons and prevents the molds in which the softwood cores are positioned from bulging outward during the coating processes, thereby reducing the tolerance of the board thickness to an absolute minimum.

In addition, a slow-curing PU system is used to ensure that the coating can penetrate deep into the wood structure, thereby guaranteeing a strong bond with the wood surface. Four cavities can be filled with polyurethane at the same time. The molds are conveyed by systems located to the left and right of the press, with a rail-guided filling carriage loading and unloading the respective chambers. The buffer section holds a total of 15 steel molds. A pair of FANUC robots are responsible both for placing the cores inside the molds and for removing the coated panels.

Achieving a high level of vertical integration has always been a major priority for WASA. These investments will expand the concept further, securing efficient production and high quality assurance standards in the future, too. ■

01 | Milling process of the aluminum sprue | 02 | Production drawing of an inlay | 03 | Milled aluminum component
04 | WASA WOODPLAST® ready for demolding | 05 | Removing WASA WOODPLAST® from the mold carrier
06 | PE inlay with aluminum carrier | 07 | FANUC robot



NEW WETCAST PRODUCTS

Following frequent customer requests from the wetcast manufacturing sector, WASA explored the development and manufacturing of flexible, polyurethane-based production molds for the concrete block industry for the first time in 2007.

15 years of innovation

Back then, customers came almost exclusively from Germany, Austria, Switzerland and other Western European countries. The plant technology dominant at the time usually had a low level of automation, making it very labor-intensive. Series manufacturing of large quantities was not possible under these conditions. The products relied on their unusual surface structures and intricate geometries, which could not be manufactured using the dry-cast production techniques conventionally used up to then. As a result, the entire area

remained in the shadows for a long time and was very slow to develop. Wetcast products were almost exclusively found in gardening and landscaping, with steps, stone walling systems, raised beds, pool coping and other special products as the key goods.

It was not until the first partially automated production plants lowered costs for manufacturing concrete block products that the product range saw significant expansion. These plants mainly produced terrace slabs in various sizes,



02

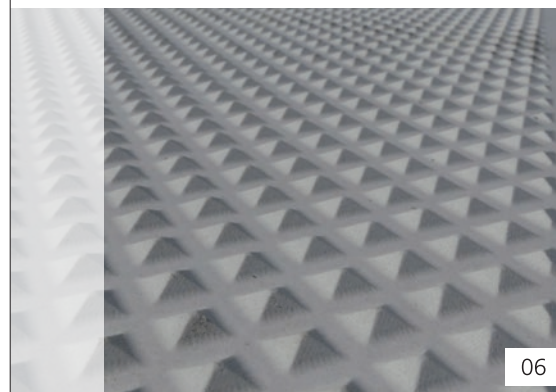
03

which impressed with the detailed structures of natural surfaces such as travertine, slate or various wood looks. Because of the appealing surface structures, these stone products could be sold at higher prices than standard products from a dry cast production facility. As a result, they quickly carved out a new and increasingly important niche in the market.



04

05



06

02 | WASA Stonecast, Basalt, KANN GmbH
 03 | WASA Woodcast, Timber, MAX Lochboden GmbH
 04 | 05 | 06 | Omniboard, Lithonplus GmbH & Co. KG

Increasingly, the products were also marketed through building materials stores, where the sample stands of the individual wetcast manufacturers could be viewed. The producers also realized that the market was moving on and began to present their entire ranges of available surfaces to customers in their own catalogs, thereby boosting demand. Driven by the rising demand, the next generation of plant technology quickly followed.

The key to success was the system's high level of automation – similar to that of a dry cast

plant. Alongside the plant technology itself, system solutions were also needed – consisting of support systems and production molds, which allowed any required format to be produced in a standardized and efficient manner. Between 100 and 300 individual molds and a corresponding stacking support system were required to manufacture a single stone size. A stone series consisted of three to five different sizes. Meanwhile, dry storage capacities comprised up to 1,000 support systems, which were circulated to filling stations and removed from the molds automatically.



07



08



09



10

07 | WASA Woodcast, Oak, Marshalls | 08 | WASA Stonecast, Brick, Marshalls | 09 | WASA Woodcast, Timber, PRESBETON Nova
10 | WASA Stonecast, Travertine, PRESBETON Nova

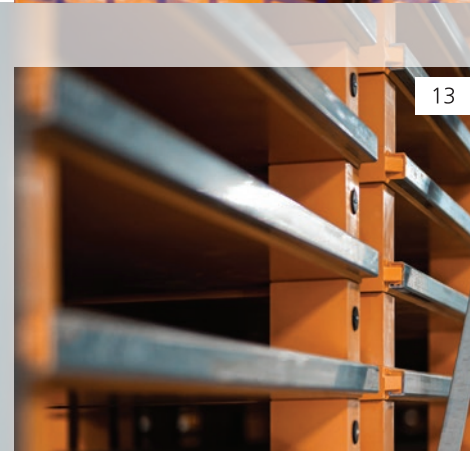
11 | 12 | 13 | WASA, automatic WETCAST production



11



12



13

As the level of automation constantly increased and investment in new plant technology grew, the sales region expanded from Western Europe towards the east and overseas. Today, wetcast products are manufactured automatically in countries such as Poland, Romania, Czechia and Serbia, but also in Turkey, the United States, Canada and the Dominican Republic. ■



DR. ARNO SCHIMPF

**Always looking
to the future!**



Four words that best describe Dr. Arno Schimpf: passion, openness, tenacity and reliability. Dr. Schimpf has been part of the management team at the Neubrunn site in Thuringia since 2016. He is responsible for the WASA CONSTRUCT division and, since 2021, the development of WASA WOODPLAST®. Before joining WASA, he gathered extensive expertise in the area of plastics at the Jakob Becker Group – one of Germany's biggest recycling companies.

Arno Schimpf holds a doctorate in mechanical engineering and heads numerous projects at WASA, benefiting from both his specialist expertise and his highly engaging manner, which allows him to captivate and motivate people and get the team behind him again and again. Typically for WASA, most of the projects he coordinates in the Research and Development department are conducted in collaboration with universities – close cooperation that runs especially smoothly thanks to Dr. Schimpf's previous role at an academic chair.

Another of the 59-year-old's positive traits is a rarity for someone in his position: He is not afraid to roll up his sleeves and take on tasks that are not in the job description of a Board member or managing director. This makes him stand out and earns him the greatest of respect from everybody at the company and from our customers.

Schimpf is also keen to tackle problems outside work. He has held a voluntary role on his local council since 2019, and was elected mayor of Neubrunn, home to WASA's production site, in 2022. That means that, after dedicating all day to WASA's board and mold



02

production, Dr. Schimpf spends his evenings and weekends fighting for the construction of a new nursery school or attending to the approval procedure for new wind turbines in the district.

How does such a busy person switch off from all this stress? Arno Schimpf and his wife love to relax by taking long trips in their motorhome. This form of travel offers exactly what he wants out of a vacation – freedom and the ability to decide where to pitch his tent whenever he likes. ■



01



03



04

"Success comes from doing what you love."

Dr. Arno Schimpf



RESEARCH AND DEVELOPMENT AT WASA

It's a matter of expertise

The terms research and development are emblazoned on the flags of every modern company. To what extent this is also put into practice is often a different matter.

When a company like WASA with a history of over 63 years and products that, such as the WASA UNIPLAST® ULTRA solid plastic board, have already been on the market for 33 years, talks about research and develop-

ment, it means that seasoned products with decades of proven performance have to be perfected. This is not always an easy undertaking, because making very good things even better is a challenge.



02

In the case of products relatively new to the portfolio, such as the polyurethane molds or stack carrier systems for wetcast applications of the WASA CONSTRUCT brand, R&D also means involving customers in the first steps and sounding out what is good and what needs improvement in a trial-and-error process - ultimately to develop and manufacture the most suitable and functional product for the user.

WASA's largest current research project, Concrete Plant of the Future, is under the leadership of the IAB Weimar. The aim of the research project is to develop an expert system for the production of concrete products and a consulting tool to improve the processes in

the concrete plant. Further research projects are running in parallel with the University of Kassel and the Chemnitz University of Technology. At the end of all these research and development processes, we always turn to practical implementation in production and sales. This is precisely why WASA regularly organizes training events for employees from the various company divisions, where the latest research projects are discussed and new products and production processes are presented. The most recent example was in February at a two-day internal event, when employees from the Darmstadt sales office met at the plant in Neubrunn (Thuringia) to be brought up to date on the latest developments.

WASA BOARDS

With almost 90 percent of the group's turnover, the production boards are still by far the most important product family. WASA sells year around 200,000 production pallets for static board machines worldwide every. The main sales areas are Europe, the USA, Canada, parts of South, Central and Latin America and Mexico. But also in Australia or Asia, people appreciate the WASA UNIPLAST® ULTRA solid plastic board in particular because of its very long service life, the possibility of regrinding and the very good production parameters.

So it is not surprising that WASA's capacities for the production of this board were exhausted and had to be expanded. In 2019, the company decided to build a further, fourth plant for the production of this solid plastic board. Equipped with the latest extruder and mold technology, the fourth plant started regular operation in 2023. During the training, the WASA employees enjoyed an interesting peek into the production hall

to explain the new production technology and to answer open questions. The new plant is the most modern of its kind in terms of energy efficiency and cycle time. Making up a share of around 80 percent, solid plastic boards are the most important type in the entire board range. WASA processes around 14,000 metric tons of industrial plastics annually for this purpose - not including the glass fiber added to each WASA UNIPLAST® ULTRA to increase impact strength and stability.

But the polyurethane-coated compound board WASA WOODPLAST® has also secured its place in the market and will also benefit from a completely new production line at WASA this year. The employees of the development department had to comply with several requirements and implement them in a production line. To find out the secrets of this success and the challenges we encountered when manufacturing WASA WOODPLAST®, read our report starting on page 8.



03



04



05

WASA CONSTRUCT

It was also exciting for the staff to visit the mold production hall for wet- and precast applications. The production of the polyurethane molds is a true manufacturing art form from start to finish. From the model maker to the carpenter to the employee who pours the liquid PU into the masters, everyone here is a specialist in their field.

Dr. Arno Schimpf, the managing director responsible for the department, and David Werning, the authorized signatory, presented the employees not only with the latest process technology, but also with an innovation in the field of mold making at WASA: the implementation of RFID chips in wetcast molds. While chip technology has been used in production boards for years, the installation of RFID chips in wetcast molds is still relatively new.

In addition to the conventional wetcast molds, another sub-sector has also established itself in WASA's daily business. For

WASA SHUTTERING, wood-based panels made of European spruce veneer are coated with polyurethane in Shore A65. The edges of the wooden beams are also coated with the flexible polyurethane and thus give the production table a laminar seal. WASA SHUTTERING is supplied with a standard chamfer at the factory to produce smooth and clean edges on concrete blocks. Extensive silicone work to seal the formwork and chamfering is therefore not necessary. The highly wear-resistant polyurethane coating on the concreting and edge side reduces the wood swelling of the veneer layers used and thus increases the service life of the formwork.

Two eventful days delivered impressive proof that research and development are not just lip service, but are lived practice at WASA. ■



06



07

01 | 02 | 03 | Discussing the individual production lines and special features of our products

04 | 05 | 06 | 07 | Various detailed insights into the WASA CONSTRUCT department



Sven Beisel is perfect for WASA. Why? Because he shares his employer's ambitions and character traits.

Having joined WASA in 2007, he is now based in Darmstadt and responsible for sales in Scandinavia, the UK, the Benelux states and the Baltic region – to name just a few. His contacts there value him and enjoy his infectious energy, warmth and reliability every time he gets in touch.

The constant pursuit of improvement is what fascinates him about his job at WASA – and spurs him on time and again. In Beisel's view, the friendly atmosphere and good collaboration at the company – with strong teamwork, short chains of command and lots of business trips – are an appealing mix that prevents everyday working life from becoming routine.

Sven Beisel strives to achieve the right balance between his career and his leisure time. Outside the office, he loves to find this balance by spending time outdoors and going to soccer matches at Eintracht Frankfurt, where he has been a fan for more than 30 years and a season ticket holder for 20. ■



SVEN BEISEL

Balance without monotony



BETONWERK PALLMANN

Trust pays off

Betonwerk Pallmann GmbH is based in Dollern – an hour's drive to the west of Hamburg – where it has produced high-quality concrete products for the German market since 1978. But the company itself has a history stretching back more than 80 years. Founded in Schillen (today known as Schilino) in the Tilsit (today: Sovetsk) district of East Prussia in 1928, it was managed by Otto Pallmann from 1950 onwards. Today, Ingo Pallmann is the third generation of his family to run the company, which currently has 10 employees. Pallmann have now placed their trust in WASA AG's production boards for a second time, this time choosing the premium product WASA UNIPLAST® ULTRA, which was delivered in spring 2019.

Betonwerk Pallmann GmbH's range of products includes formwork blocks, deep curb-stones and turf stones in various sizes and designs. The company has decades of market experience and has grown along with market requirements.

For 50 years, Betonwerk Pallmann has been manufacturing "System Pallmann," a highly specialized concrete formwork block with tongue and groove that is one of the top products in its portfolio. Finely tuned production technology and a love of craftsmanship enable dimensional accuracies of ± 1 mm, along with high levels of compressive strength. Moreover, because the block can be placed directly from the pallet onto the masonry, there is no need to turn it.

Ingo Pallmann can often be found on the production line supporting his employees – just one of the reasons why Betonwerk Pallmann GmbH is standing up to the competition even today. Team spirit pays off, after all. On top of this, the company's good production technology enables it to achieve outstanding results year after year.

Needless to say, the company's suppliers also have to meet its high quality standards. As the supplier of production boards, WASA passes this test with flying colors. "If you want a true-to-size block, you need good production equipment," comments Ingo Pallmann. For him, this includes a good production board. That is just one of the reasons why the company decided to buy its first all-plastic production boards in 1996 – then simply called WASA UNIPLAST®. The boards were not yet reinforced with glass fibers, but were instead made from a polyolefin mix.

For years, the even, joint-free surface of the WASA UNIPLAST® boards ensured that Pall-

mann's blocks were flat and smooth; the company merely had to keep the all-plastic boards clean, which it did successfully. "Basically, it is very important to check the steel brush constantly," states Pallmann. He also sometimes had to use a release agent for certain products, albeit not permanently.

The company decided to regrind its 14-year-old all-plastic boards in 2010. Although their vibration transmission was still comparable to that of new boards, their surfaces had suffered over the years, if only a little. The production boards were ground from 55 mm to 53 mm at WASA's Neubrunn site, making them even again and as good as new. For Pallmann, this was a necessary step that was much more economical than purchasing new boards – grinding the production boards just once meant that a costly replacement was no longer necessary. Due to its structure, the homogeneous, inorganic material retains its very good vibration properties over many years – unlike wooden boards coated with plastic.



02

In 2018 – a further eight years after the boards were ground – it became apparent that they no longer met the company's quality standards. WASA was contacted once again and the delivery of new WASA UNIPLAST® ULTRA boards was soon agreed. Pallmann opted for glass fiber boards with the familiar C profiles, although these are actually no longer necessary, as the plastic of the WASA UNIPLAST® ULTRA profiles is fiber-reinforced.

But Pallmann's economic success story did not end with the regrinding of the old boards and the delivery of their replacements: The WASA UNIPLAST® boards, which were almost

22 years old when they were replaced, were sold at a profit to another company abroad, where they continued to be used in a concrete block plant for a number of years.

To this day, nobody at Pallmann has regretted the decision to purchase and remain true to all-plastic boards from WASA. On the contrary: Ingo Pallmann is highly satisfied and is looking to the future with the glass fiber-reinforced WASA UNIPLAST® ULTRA with optimism. "Maintaining high quality standards demands consistent production parameters; the all-plastic boards really help with this," he concludes. ■



03



04



REPORT ON CLIMATE AND ECOLOGY

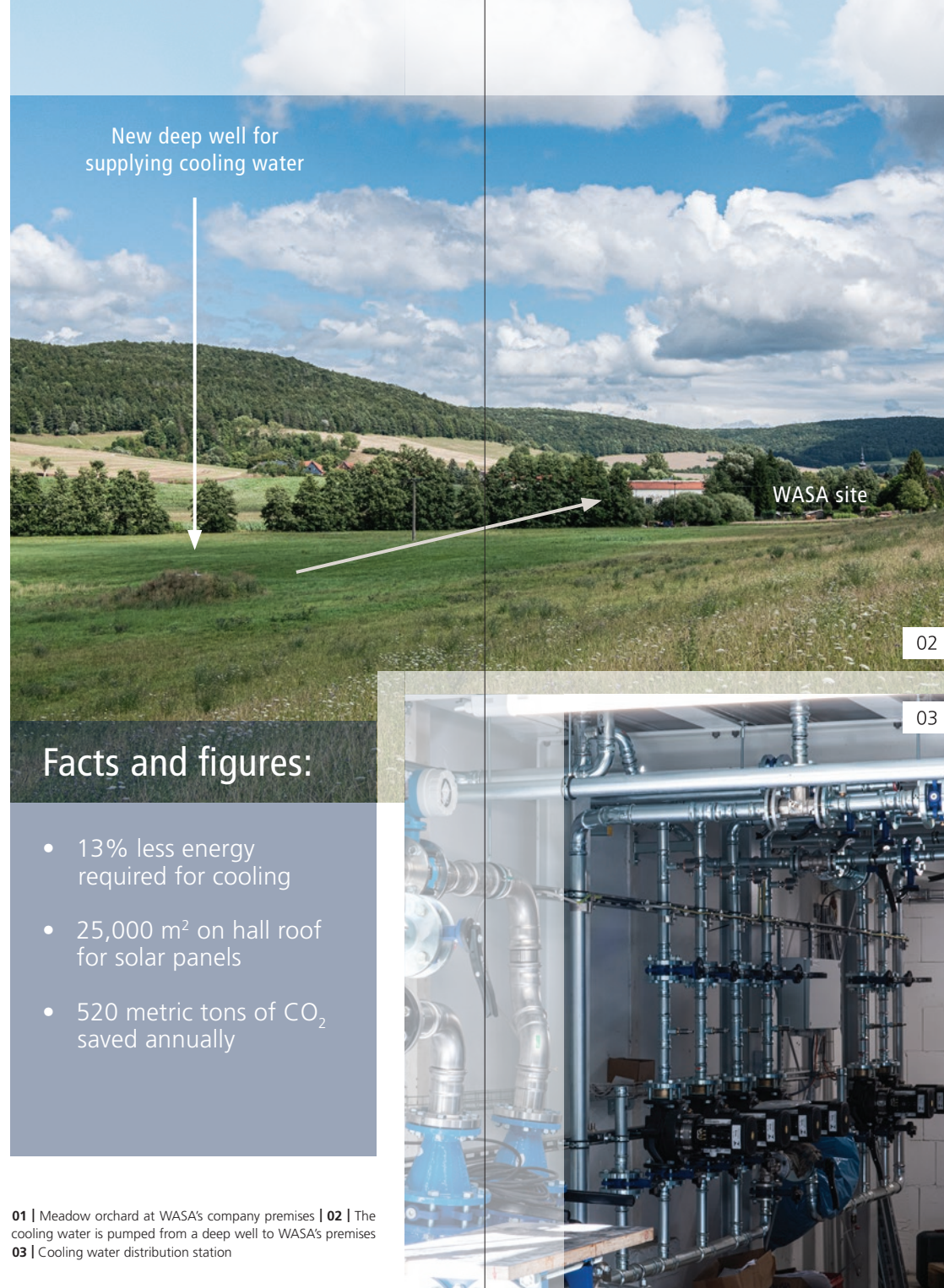
Efficiency in harmony with nature

The effects of climate change on the environment are becoming ever greater. Emitting large amounts of greenhouse gases, industry has a key role to play here. Efficiency and sustainability need to go hand in hand in order to enable an economy that is fit for the future while also meeting legal requirements on climate protection.

To achieve this, industrial processes have to be optimized ever further and made ever more efficient. WASA shares this ambition and is taking action to reduce its CO₂ emissions. The company introduced an energy management system in line with DIN EN ISO 50001 as early as 2016 and works on improvements continuously and systematically. As a result, the energy requirement of WASA's production site in the Thuringian town of Neubrunn fell by 13% between 2016 and 2021. Considering that the site consumes 3.6 million kWh of electricity and almost 5 million kWh of gas annually, this is an especially impressive figure in today's climate and is also of great economic importance given the ever-rising energy prices.

One of the greatest energy savings came from centralizing compressed air and implementing a system for identifying and eliminating leaks. Future steps will include renewing the current compressor and the dryer for the plastic granules. A heat exchanger is also to be added to the current system. These investments could save a further 11 metric tons of CO₂ every year.

The large hall area of over 2.5 ha presents WASA with a superb opportunity to generate electricity through photovoltaic systems.



Facts and figures:

- 13% less energy required for cooling
- 25,000 m² on hall roof for solar panels
- 520 metric tons of CO₂ saved annually

01 | Meadow orchard at WASA's company premises | 02 | The cooling water is pumped from a deep well to WASA's premises
03 | Cooling water distribution station

A system with 350 kWp will be installed by the end of this year, with two further systems being added in 2025 and 2026 as part of a roof renovation that is necessary for structural reasons. Once all three systems are in operation, they will save a further 520 metric tons of CO₂ every year.

Sustainability also plays a major role when producing WASA UNIPLAST® ULTRA. Here, WASA uses 100% recycled plastic – which is predominantly sourced from Germany – to improve the ecological footprint through short transport distances. This effect is further reinforced by the all-plastic board's long service life of up to 20 years and the option of regrounding the boards.

The topic of energy and the associated CO₂ savings are also taken seriously when implementing the latest plant technology. For example, a 1.2 kilometer-long water line was laid to the nearby well when the fourth plastics plant was built. This innovative and climate-neutral cooling method saves a total of 180 metric tons of CO₂ emissions every year, as the molds were previously cooled using thermal oil.

As well as setting up three electric car charging stations by 2025, WASA is also committed to conserving nature: The company owns a meadow orchard that is subject to strict nature conservation rules due to the rare occurrence of *Dactylorhiza incarnata*, a type of marsh orchid (*Dactylorhiza*). Indeed, WASA's meadow orchard is the only known natural site in the entire district in which the orchid flowers.

FEATURE



Florian Müller
Research Associate (IAB)

Florian Müller (32) studied industrial engineering at the Karlsruhe Institute of Technology (KIT), focusing on production, marketing and business management. In his master's thesis, he examined the topic of "Designing Production Networks Taking the Production and Network Strategy into Account," receiving his Master of Science in 2018.

Now a research associate in the Mechanical Engineering department of the Weimar Institute of Applied Construction Research (IAB), he focuses on the production of small concrete products.

FEATURE

Obere
Spezifikationsgrenze

- Prozess läuft auf Zielwert
- Prozess läuft innerhalb der Spezifikation
- Prozess liegt außerhalb der Spezifikation

The concrete factory of the future

Routine industrial operations at a concrete factory give rise to countless challenges. Idle plants and quality problems can be attributed either to technical issues or to human error. Often, only individual employees know how to deal with these situations, and their knowledge is rarely documented. An ongoing research project by the Weimar Institute of Applied Construction Research (IAB) entitled “Betonwerk der Zukunft” (Concrete Factory of the Future, or BdZ) aims to gather this wealth of experience and knowledge using a holistic approach and make it available to employees working in production.

The project began in May 2021, with representatives of concrete product manufacturers and industry suppliers working together closely. Basalt- & Betonwerk Eltersberg GmbH

& Co. KG, Betonwerk Pfenning GmbH, BWL Betonwerk Linden GmbH & Co. KG, Franz Carl Nüdling Basaltwerke GmbH + Co. KG, Weisenböck Baustoffwerk GmbH and WESER Bauelemente-Werk GmbH all contribute their expertise from the field of concrete product manufacturing. In addition, KOBRA Formen GmbH, Masa GmbH, Robert Thomas Metall- und Elektrowerke GmbH & Co. KG and WASA Compound GmbH & Co. KG provide the plant technology for most of the manufacturing sequence in a concrete factory. The project is supported by the concrete association “Straße, Landschaft, Garten e.V.” (SLG) as an associated partner.

All observations made as part of the research project are based on the technology chain of the concrete factories. At the beginning of the project, the processes in the concrete factories



02

01 | Diagram | 02 | “Concrete Factory of the Future” workshop in front of WASA’s administration building in Neubrunn

were monitored, analyzed and documented in a series of in-depth assessments, and numerous interviews were conducted with employees. Expert interviews were held with suppliers in order to incorporate their perspectives and process insights into the project.

Following these assessments, the large data pool was prepared with the aim of conducting the most comprehensive analysis possible. Alongside the technical interrelationships, the factories’ logistical challenges were a key focus. Taking the manufacturing sequence as a starting point allows processes to be evaluated at various levels of abstraction. In addition to the structural principles of manufacturing (material flow analysis), for example, this involved determining the factors that influence concrete product manufacturing and the corresponding parameters, and creating a visual overview. A sensitivity analysis was then used to investigate how the individual influencing factors and parameters defined in this step interact. In the future, this analysis can be used as a starting point for further evaluations and as a basis for data-based monitoring of the manufacturing sequence, for example.

Several joint workshops with all project partners were held during the course of the project, allowing the participants to discuss the project and work on content together. The third such workshop was held at WASA in Neubrunn at the end of May 2023 and focused on product quality, quality assurance and related issues. The partners discussed interesting information for the quality characteristics of concrete blocks and the possible design of a quality management system as part of a production system for concrete products. Among other things, the QM

system utilizes the potential of statistical methods and key figures to form the basis for data-based monitoring of the manufacturing sequence. The ideas were illustrated using exemplary measured data taken from an IAB plant for block height measurement. Dr. Arno Schimpf held a lecture on the current possibilities for integrating RFID chips into production boards, which enables the vital identification of individual stone layers. Marcel Helsper from Masa GmbH described the possibilities offered by Masa’s SCADA system, which offers alternative ways to identify stone layers during the manufacturing sequence. There was also a tour of the WASA site, showing all participants how much production at WASA has changed over the last few years.

Partners will host further workshops as part of the project, which will end in September 2023 – a format that has proven highly successful in meetings up to now. It offers a platform for representatives of both suppliers and concrete product manufacturers to work together to solve the challenges faced by the industry, providing enormous added value for the project and the industry as a whole. All of the workshops to date have seen open and fruitful exchange between the participants, which has strengthened IAB Weimar’s resolve to continue with this approach in the future. ■



As a former competitive athlete, Daniela Schlauraff knows how important the right combination of tactics and timing is. And what works in sport is not a bad approach to a career, either – especially not when you work at a dynamic global company like WASA in Neubrunn, Thuringia. Here, too, performance, judgment and coordination are the deciding factors every single day. And being responsible for transport and export takes all of these.

Be it dealing with customers and colleagues or organizing complex processes, we can always rely on Daniela Schlauraff. She feels equally committed to customers and WASA: "I always want to achieve the best results for the customer and the company and I am happy when everyone is satisfied at the end of the day, myself included," she writes. Her motivation is well known and valued both at WASA, where she has worked since 2021, and outside the company.

Daniela Schlauraff loves spending her free time with her loved ones – after all, relaxation is also essential for a fulfilled life. And when she suddenly feels the need to work up a sweat again, her little dog is always ready to help her achieve new levels of performance.



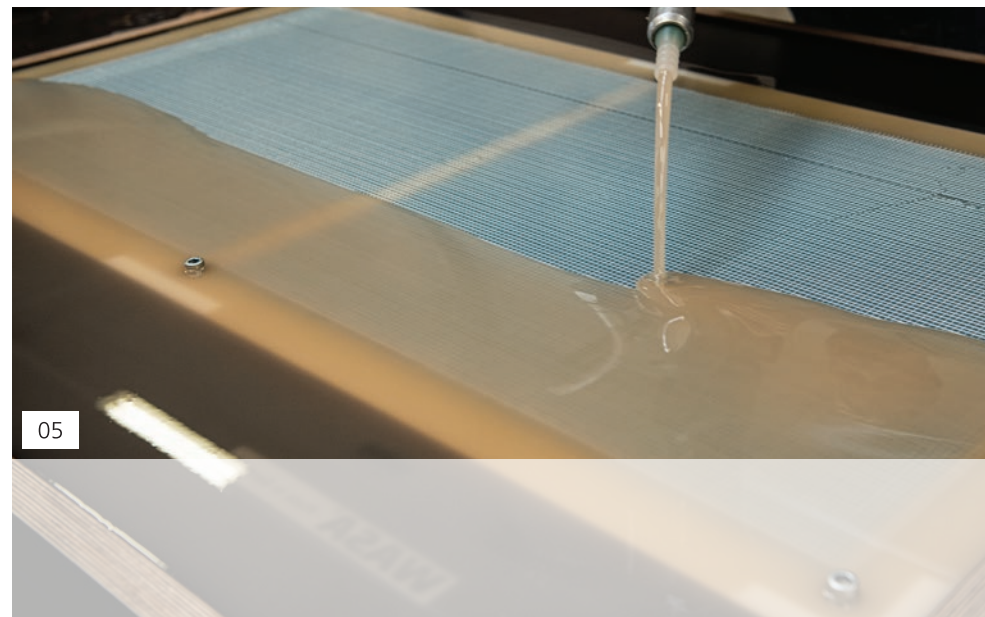
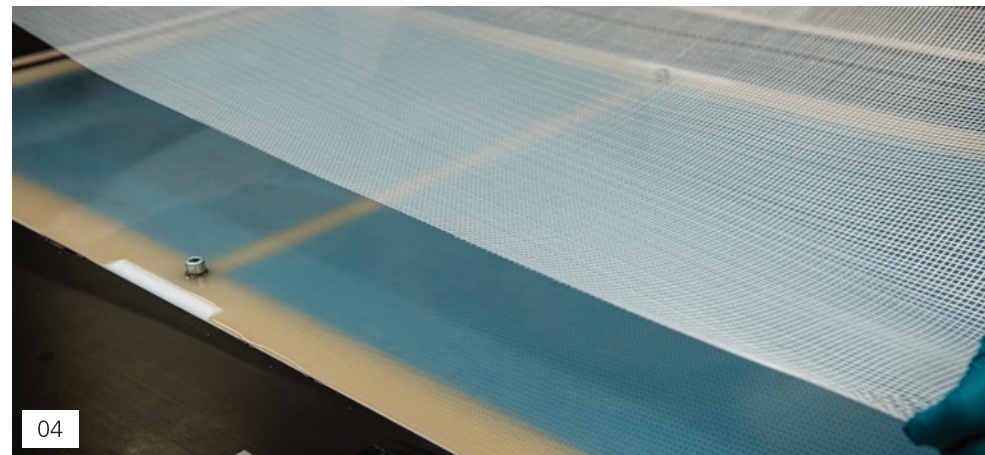
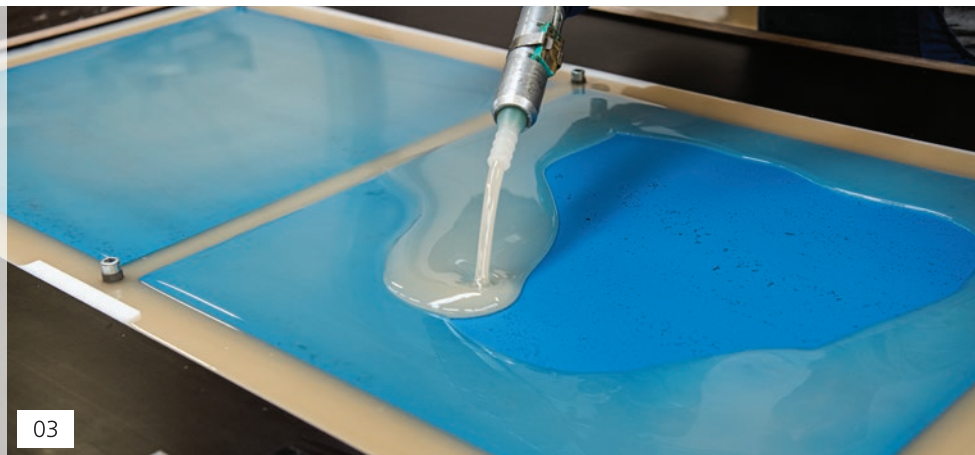
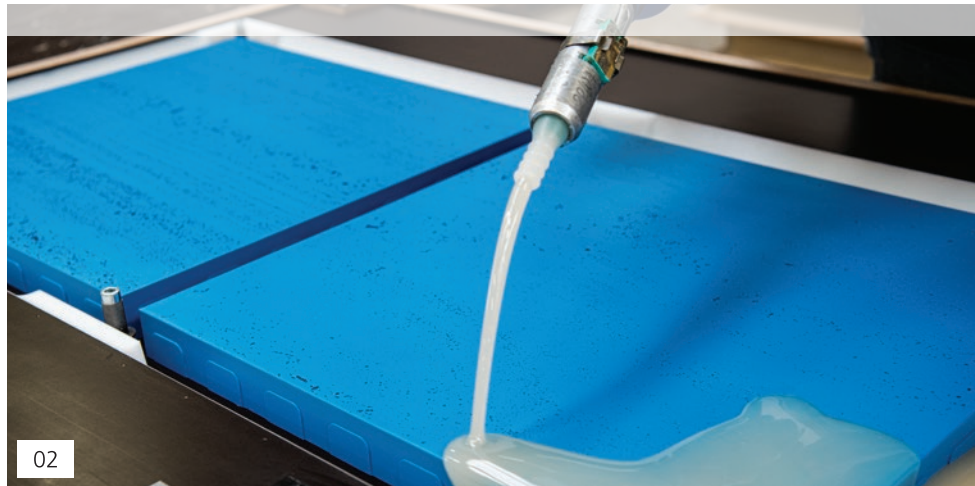
WASA WETCAST

**Wetcast
in its most
beautiful form**



Wetcast is a very popular technique for making concrete products, allowing the creation of both simple and complex molds and designs. The surface of wetcast products has a very special appearance that is valued by designers and architects the world over.

WASA's standard portfolio alone includes a large number of molds, enabling customers all over the world to use wetcast molds to manufacture beautiful concrete products simply and without having to make large investments. While the concrete mix and the color are, of course, a key part of the finished concrete product, the aesthetic aspects of wetcast products – such as their geometry and their surface texture – and the constant advances in molding technology play a significant role in creating a unique and appealing atmosphere with the concrete blocks produced.



“Self-standing, frameless molds are increasingly replacing molds with wooden frames.”

**WASA** ARTCAST**WASA** STONECAST**WASA** WOODCAST

STANDARD PORTFOLIO

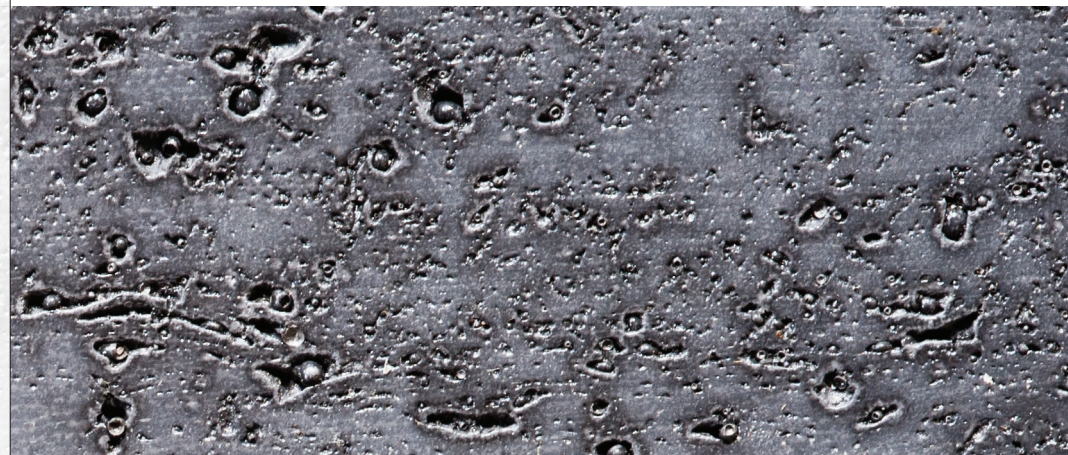
The timeless classic that is travertine, the classy permanence of granite, the natural harmony of basalt, a stylish historic look with slate, or the nostalgic charm of a slim wood finish – WASA's standard portfolio has them all.

When the first edition of the WASA WETCAST brochure was published, nobody expected such a spectacular success story. Customers from Germany, the United States, Argentina, Puerto Rico, Italy, Austria, Switzerland, France, Pakistan and many other countries began their own success story with WETCAST molds from WASA, and are still producing concrete block products from the popular WASA Artcast, WASA Stonecast and WASA Woodcast series to this day.

With these series and their various block shapes, WASA offers its customers an excellent introduction to the world of wetcast products.

The tried-and-tested range of formats and extension systems – from large blocks, matching terrace slabs, steps and walling systems, all the way up to a complete pool coping solution – covers all bases. End customers benefit from very fast availability of the molds, as the required models for casting with polyurethane are already in stock.

Of course, WASA's model workshop can also produce bespoke models and molds in accordance with customer wishes.



06

NEW DEVELOPMENT IN MOLD DESIGN

The development of new technologies and materials is opening up ever more possibilities when it comes to mold design. Combining traditional craft techniques and cutting-edge manufacturing methods allows the creation of complex and intricate molds that were previously unthinkable.

Sustainability is another important factor behind the new development in mold design. Ever more manufacturers and designers are choosing environmentally friendly materials and manufacturing processes that conserve resources. As well as resulting in sustainable products, this opens up a world of new opportunities.

While other manufacturers of wetcast molds tend to rely on tried-and-tested solutions,

WASA's employees continuously work to optimize their products. Close contact with customers, suppliers and manufacturers of automation systems for the wetcast industry bears fruit in a constant stream of new and improved solutions. WASA's founders Heinz Bechtold and Peter Webel were guided by the motto: "Make good things even better!" And the principle is now being followed to the letter by WASA's second generation, Matthias Bechtold and Jannik Webel.

Among other things, WASA's new mold technology consists of a free-standing mold, rendering obsolete the wooden frames that were previously required for most slab and paving products. The structures and materials have been enhanced to make the molds even more stable, yet also flexible. The wooden frame

used previously, which was usually made of multilayered wood, is now used as a stackable supporting element, if at all. Today, many partially and fully automated wetcast systems rely on the use of stacking support systems; the molds are either screwed onto these, or a special holding bracket is fixed to the stacking support system.

The polyurethane matrix itself and the fiber mesh that WASA uses in its WETCAST molds were developed and adapted specifically for the high performance requirements of wetcast production facilities. The mold design has also been completely revised to fit the molds' self-standing function. Moreover, WASA's developers and designers gave the molds a thin covering of PU on the bottom side closest to the production board. Although this layer

slightly increases the use of polyurethane, the benefits outweigh the disadvantages: The molds sit cleanly on the substrate, almost completely eliminating the unwanted scraps of stone and concrete that may otherwise become visible on the surface of the end product. The molds can be fixed on a support board using the built-in metal sleeves around the stone panels, which are always integrated in the polyurethane. Other manufacturers, such as Canadian company Automacad, use a special stacking support system and molds with fully integrated steel rods, which firmly hold the molds on the stacking support system and ensure optimal handling in the fully automated cycle.



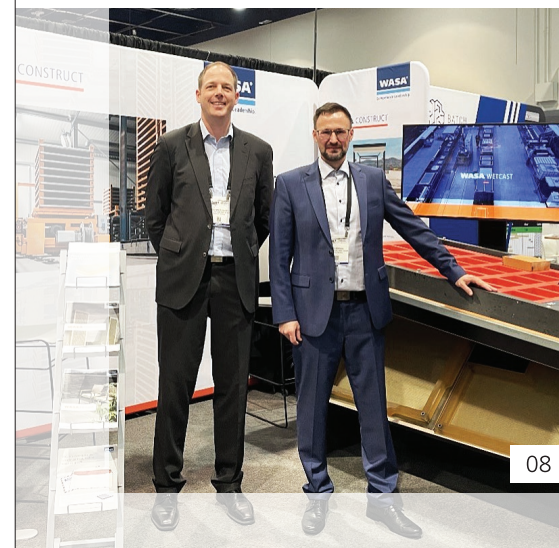
WASA ON THE INTERNATIONAL STAGE

Trade fairs are a concept that is frequently called into question. The often very high costs involved are understandably a concern for many. Of course, WASA also keeps a close eye on its bottom line, yet the company has chosen to take part in as many trade fairs worldwide as possible. Today – and especially after the pandemic – it is more important than ever to meet in person and to have a defined time and place to make new contacts, learn new things and exchange information and views on the construction and concrete block industry. In January 2023, WASA once again had its own stand at World of Concrete.

The trade fair saw a large number of visitors from South America and the United States, but customers and interested parties from countries as diverse as Japan, South Korea, Pakistan and Israel also surprised us with a visit to WASA's trade fair stand in Las Vegas, USA. With almost 50,000 registered experts from more than 120 countries, taking part in World of Concrete definitely paid off for WASA and far exceeded the company's expectations. WASA has already registered for next year's event, helping to celebrate World of Concrete's 50th anniversary. The Annual Meeting of the ICPI/NCMA and the Precast



07



08

Show also attracted many international visitors to Columbus, Ohio in February. WASA's Sales Director Benjamin Burschey was there, attending the official merger of the two associations, which are well known in the United States: ICPI (Interlocking Concrete Pavement Institute) and NCMA (National Concrete Masonry Association).

The new name of the resulting organization was unveiled during a lunchtime event at the Hyatt Regency Hotel: CMHA (Concrete Masonry & Hardscapes Association).

The event was crowned by the Precast Show, which took place in parallel. There, Automacad, a leading provider of automation systems, showcased the SystemBoard developed jointly with WASA, including the SystemMolds, at its trade fair stand. Together with the manufacturer, the stacking support system and the matching molds were devised and fine-tuned specifically for use on the fully automatic Automacad wetcast plants – giving end customers not just a solution, but a perfectly coordinated package that takes care of everything for them. ■

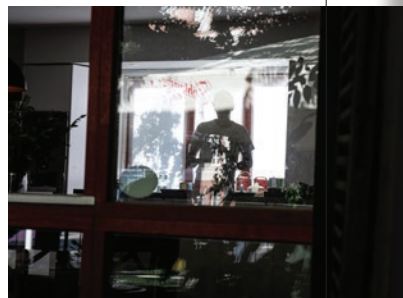
01 | Casting process for a WASA form liner

02 | 03 | 04 | 05 | Casting process for a self-standing WASA multi-cavity mold

06 | Formwork for a wall system with circular structure

07 | WASA's trade fair stand at bauma 2022 in Munich

08 | Benjamin Burschey and David Werning at World of Concrete 2023 in Las Vegas



NEW PRODUCTION SITE | WASA CONSTRUCT goes West

FLEX CORE | Flexible Cores for Wetcast Molds

KORTMANN BETON | A Pioneer in its Industry

IMPRINT

PUBLISHER

WASA AG
Europaplatz 4
64293 Darmstadt

REPRESENTED BY

Matthias Bechtold (CEO)
Jannik Webel

CONTACT

Telephone: +49 6151 7808-500
Telefax: +49 6151 7808-549
info@wasa-technologies.com
www.wasa-technologies.com

EDITORIAL STAFF

Matthias Bechtold, WASA
Dr. Arno Schimpf, WASA
Jannik Webel, WASA
Susanne Anding, WASA
Nico Wallfarth, NIC HAY
Florian Müller, IAB Weimar gGmbH

DESIGN & PHOTOGRAPHY

NIC HAY PHOTOGRAPHY & DESIGN
www.nic-hay.com

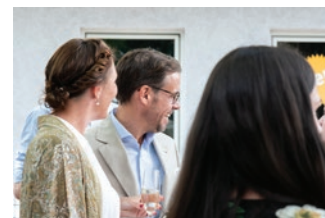
PRINT

DRACH Print Media
www.drach.de

IMAGE CREDITS

WASA AG
NIC HAY PHOTOGRAPHY & DESIGN
www.nic-hay.com
Florian Müller, IAB Weimar gGmbH





THE BOARD WITH A PROFILE.



WASA WOODPLAST® is a true all-rounder. It combines the advantages of an all-plastic board with those of a lighter wooden board – from its outstanding bending stiffness and joint-free polyurethane surface to the fully galvanized C profiles, which provide both effective protection and additional stability in the tough conditions of the production line.

WASA WOODPLAST®: The world's only fully coated production board with a profile.



Competence Leadership.