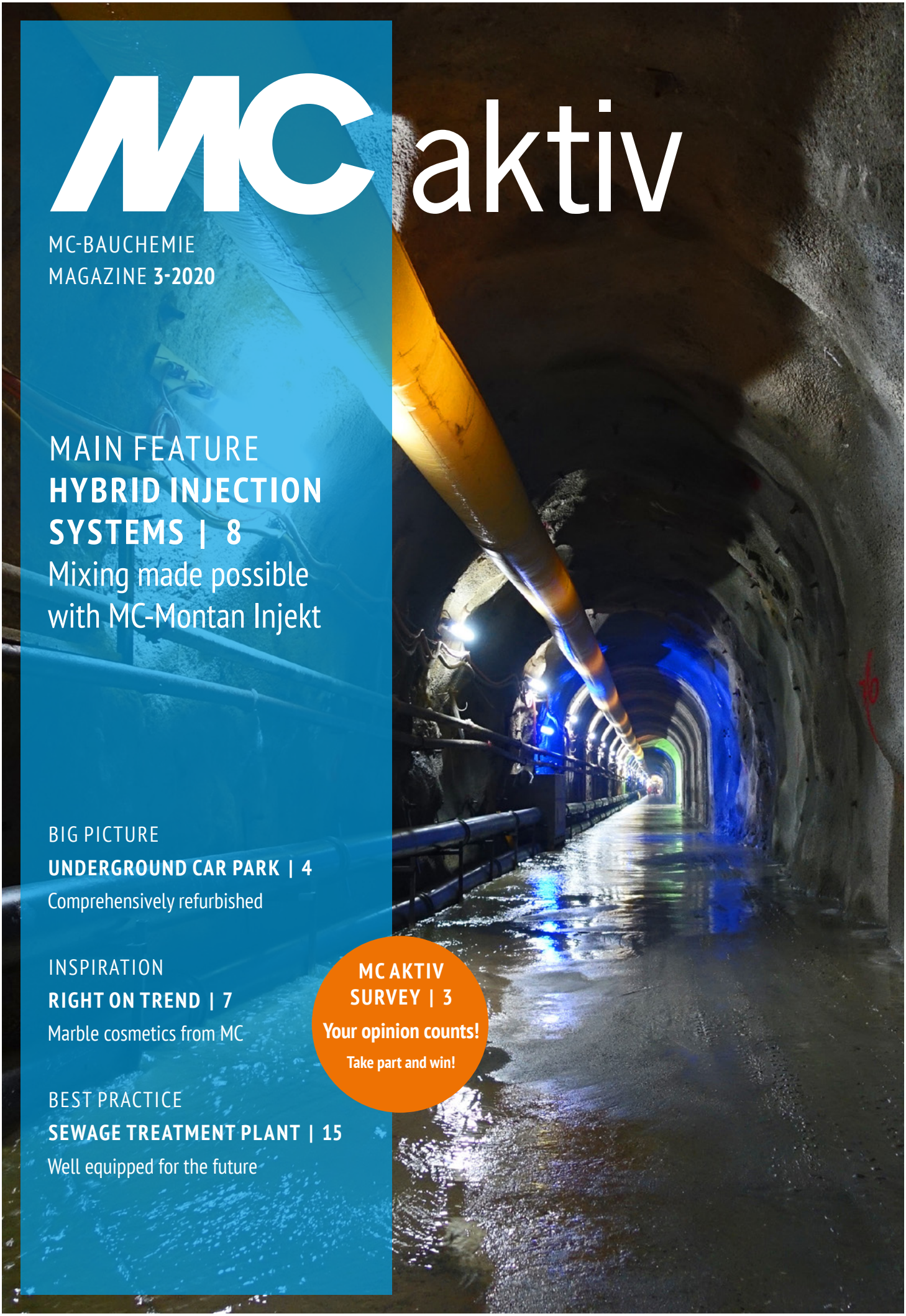
MC aktiv

MC-BAUCHEMIE
MAGAZINE **3-2020**



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Well equipped for the future

BE SURE. BUILD SURE.

Ladies and Gentlemen:

Today's coronavirus pandemic reminds us of the importance of aspects such as safety and reliability. In uncertain times as these, our awareness of such qualities is particularly acute.

With our corporate ethos and our product systems, we at MC-Bauchemie are committed to safety and reliability, whether in car park renovation, tunnel construction, building applications or industrial structures. You can read more about this in the project reports provided in this issue. That our products are also used for the aesthetic enhancement of buildings is also apparent from the inspiring articles contained in this edition covering our marble cosmetics and concrete retouch-and-glaze systems.

We also want to inspire you with our innovations. And one of our new technologies has recently made a significant breakthrough: While hybrid injections with cement and synthetic resin have not always been successful in the past, now a sophisticated combination of control and pumping technology from Renesco and our MC-Injekt Montan series has been found to produce excellent results. You can read more on the subject in this edition's Main Feature. In ending, I must wish all our readers the very best of seasonal goodwill and a prosperous, successful and happy New Year! But in the meantime, stay healthy!

Kind regards,

Dr.-Ing. Claus-M. Müller

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Credits and legal

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COVID-19: INFECTION CENTRE IN GHANA BUILT IN 100 DAYS WITH MC HELP

Interior and exterior views of the new Centre for the Treatment of Infectious Diseases in Accra.

Against the background of the coronavirus pandemic and rising infection rates, the foundation stone for the construction of a centre for the treatment of infectious diseases was laid in the Ghanaian capital Accra on 24 April 2020. The construction work was completed in record time – just 100 days – allowing inauguration of the facility on 24 July 2020.

The construction project was a private-sector initiative involving many professionals from the construction industry – not just architects and civil and structural engineers, but also manufacturers of construction chemicals such as MC-Bauchemie Ghana Ltd. The 48th Military Regiment of Ghana, which is also responsible for medical care, security and technical (construction) projects in Ghana, coordinated this unique project. Thanks to the CST 3D construction method, which is based on industrially prefabricated building panels – implemented for the first time in Ghana – and the impressive teamwork of everyone involved, the build was completed and the facility handed over in record time.

The award from the Ghanaian Government was accepted on behalf of MC Ghana by Christina A. Aikins on 14 August 2020.

Resilient floors

Given the imperatives that the floors of the Centre for Infectious Diseases needed to both exhibit antimicrobial properties and be UV-stable, self-levelling MC-DUR coating systems from MC-Bauchemie were chosen for laying over an area of around 4,000 m². These durable, resilient epoxy resin systems are easy to apply. They also exhibit very high UV- and also good mechanical and chemical resistance, as well as excellent cleaning properties.

On 14 August 2020, the initiators of the project awarded all those responsible for ensuring its successful completion in such a short time with the "Citation of Honour", a special accolade instituted by the Ghanaian government. Christina Adjoa Aikins, Marketing Manager of MC Ghana, accepted the award on behalf of her company

INTERVIEW OF THE MONTH

The "Interview of the Month" appearing in the September issue of FussbodenTechnik, a German trade journal for flooring contractors and screed specialists, features Tim Hillringhaus, MC's global product manager for screed systems. He talks about MC's new strategy in the screed sector, a completely revised product portfolio and future sales and distribution channels involving specialised screed sales representatives in Germany.

Read the full interview (German only):
https://bit.ly/2JXoavX

MC AKTIV SURVEY: YOUR OPINION COUNTS!

Take part and win!

In September of this year we published our magazine MC aktiv with a new look and feel. Our aim was to make MC aktiv not just more modern and reader-friendly, but also more entertaining and varied. Now we would like to know your opinions on the new layout and design. If you complete our survey by 15 January 2021, you get the chance of winning one of five Amazon vouchers, each valued at 20 euro! It won't take you more than four minutes! The answers will be anonymised for analysis purposes, with your personal data being used exclusively for the prize draw.

Here's the link to the online survey:
https://bit.ly/2HBeeY8

Pentahotel Leipzig

UNDERGROUND CAR PARK COMPREHENSIVELY REFURBISHED

The Pentahotel in the Saxony metropolis of Leipzig includes an underground car park with two parking levels. The facility's complete refurbishment spread over a total of five construction phases began in January of this year. The Berlin engineering office Drews GmbH was responsible for planning the work, and they commissioned CSE Construction, also of Berlin, to carry it out. Three project phases have already been successfully completed, with the fourth currently underway. Final hand-over is scheduled for March 2021. The repair of the wall and non-trafficked floor surfaces was done with the new slow-hardening grouting concrete Emcekrete 50 A. Subsequently, an OS 2 surface protection coating including colour upgrade with the pigmented high-performance finish MC-Color Flair pure was applied to an area of over 10,000 m².

Car park coatings from MC

The repair of the approximately 8,000 m² floor slab of the lower parking deck was carried out using MC's OS 8 surface protection system with MC-DUR 1322, a rigid coating complex that offers high mechanical load-bearing capacity and has been tested to confirm its resistance to rising damp. The equally large intermediate deck was resurfaced using the OS 11b surface protection system from MC, a flexible single-layer complex with a high crack-bridging capability.

For further information, please go to our webpage:
https://bit.ly/360RPg6

GROUTING CONCRETE FOR LARGE LAYER THICKNESSES

MC has added a new product to its Emcekrete range of concretes and mortars for rigid grouting applications in concrete construction: With Emcekrete 50 A, users now also have at their disposal a slow-hardening grouting solution which can be used both for large-volume applications with layer thicknesses up to 320 mm and as a repair mortar conforming to German concrete component protection and repair code RL-SIB. Emcekrete 50 A contains high-quality raw materials that serve to reduce the heat of hydration during setting so as to effectively prevent cracking.

For further information, please go to our webpage:
https://bit.ly/3kY7UaM

Jana Schütten
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NEW WATERPROOFING ADMIXTURE FOR CONCRETE GOODS

With Murasan Hydrotech 883, MC has launched a waterproofing solution for the production of both semi-dry and wet-cast concrete goods.

With this new hydrophobic admixture, concrete goods manufacturers can improve the resistance of their products to water penetration and thus reduce moisture-related damage. Murasan Hydrotech 883 also exhibits greater resistance to frost and de-icing salts. The hydrophobic agent provides for a better visual appearance both by minimising efflorescence and by improving the colour uniformity, brightness, and surface texture of the concrete goods.

For further information, please go to our webpage:
https://bit.ly/3l0Jhdl

Martin Labaj
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NEW PRODUCT SYSTEM FOR EFFICIENT AND RELIABLE HAND LAY-UP LAMINATION

With ombran SC, MC has developed a new, odourless and styrene-free reactive resin for use in the hand lay-up lamination of sewerage structures. ombran SC offers wide-ranging application suitability: From the connection of CIPP liners and the coating of channels and berms in manhole shafts to the provision of BSAC-resistant membranes and the completion of GRP elements and panels.

For further information, please go to our webpage:
https://bit.ly/371kYXO

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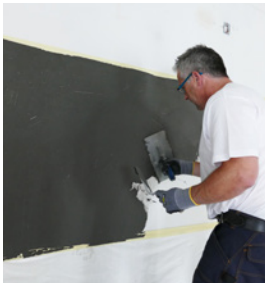
NEW RAPID-SET CEMENT MC-FLOOR TURBOCEM

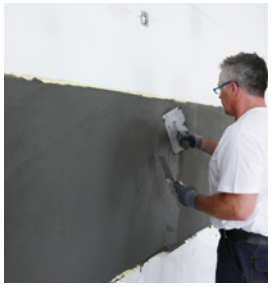
New rapid-set cement MC-Floor TurboCem from MC is a one-for-all product. The advanced ternary binder can be used for the production of screeds that need to be both dimensionally stable and ready for covering at an early stage – whether for residential, commercial or industrial duty. MC-Floor TurboCem is characterised by very good workability, low material consumption levels, high early and final strengths, low shrinkage and minimal stress development.

For further information, please go to our webpage:
https://bit.ly/3lVUfCe

Step 1: Masking and – depending on requirements – priming of the area to be treated.



Step 2: Application of the first layer of Emcefix-Spachtel F lang in anthracite grey.



Step 3: One day later: Application of the second layer of the filler and smoothing of the surface.

Step 4: Marble effect created through impregnation with MC-Color Proof pure

Step 5: Final finish with a second coat of MC-Color Proof pure. And that's it!

RIGHT ON TREND – MARBLE COSMETICS FROM MC

If you take a look at advertising brochures or catalogues of furniture stores or even lifestyle magazines, you will quickly realise that concrete surfaces are more popular than ever.

Whether on walls in the kitchen, hallway, bedroom or living room, what was essentially a niche domain occupied only by architects and designers a few years ago has now reached the masses – and it is right on trend. MC's concrete cosmetics can be used not only to visually enhance unsightly concrete surfaces (as reported in MC aktiv 2/2020), but also in settings requiring more creativity, as we will show you here. We have developed a new marble cosmetics fill-and-finish technique with which you can individually design and refine the walls in your living and office spaces.

Aesthetically appealing

This creative filler system has also been applied to the office and conference room walls of MC's new admin building in Bottrop, imparting to them a strikingly attractive appearance. The marble cosmetics technique can be applied to concrete substrates and – provided the surface is properly prepared – to plasterboard as well. At the heart of this fill-and-finish technique is the fine mineral filler Emcefix-Spachtel F lang, which is available in seven different shades. We recommend our polymer additive Murafan 39 as a means of enhancing the filler's properties in terms of improved adhesion, elasticity and workability. If priming is required, our allrounder MC-Estribond uni is the perfect solution. The marble effect is achieved using the transparent impregnation agent MC-Color Proof pure.

Five steps to a marble finish

Requiring a little skill, the cosmetic system needs to be applied in the following sequence: First of all, mask the surface you want to treat and, if applying to plasterboard, prime the substrate. Then apply the first layer in the form of a thin scratch coat of Emcefix-Spachtel F lang in the desired colour. Allow to dry. On the following day, apply the second layer of Emcefix-Spachtel F lang and smooth down. The next stage involves applying the impregnation agent MC-Color Proof pure to create the marble effect. Finally, add a second coat of MC-Color Proof pure. And that's it!

The result is a modern, aesthetically attractive marbled wall surface that is open to water vapour diffusion, is UV-stable and exhibits reduced water absorption – a unique finish that is bound to attract admiring looks!

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HYBRID INJECTION SYSTEMS
MIXING MADE POSSIBLE WITH MC-MONTAN INJEKT!

Throughout Europe, underground infrastructure projects invariably involve rock injection and consolidation works. Whether for protecting a newly driven tunnel against inflowing water or for securing loose rock, both cement and synthetic resin injection compounds have an established position in geotechnical engineering. So why not combine the two? Hybrid injection systems comprising a mix of cement and polyurethane resin are on the march – with MC very much in the vanguard.

The construction of galleries and tunnels is one of the most demanding of technical undertakings in civil engineering. These subterranean structures must meet the highest standards in terms of strength, water impermeability and durability. Injection measures are a necessary part of this, because the construction process is aligned to an interaction, largely unpredictable, of engineering method, rock strata and water. Cement injection is a proven process for rock consolidation. However, once flowing water becomes involved, it quickly reaches its limits of practicality. In the event of heavy water ingress during tunnelling, polyurethane-based injection resins are therefore required for sealing and consolidating rock zones. Polyurethane resins are fast, controllable in their reactivity, will expand in contact with water if required, and ensure that even extreme water flows are securely stopped. MC offers a complete product portfolio of water-stop, sealing and rock consolidation resin injections (see box on page 9). As indicated above, cements have an established position among injection solutions. So a combination of the two material systems can synergise the advantages of both processes. The idea is not new, although in the past the combination has been used primarily in sequence. The use of polyurethane resin and

The control and pump technology applied plays a major role in the hybrid injection.

MC-MONTAN INJEKT FOR TUNNEL CONSTRUCTION

Despite the best possible planning, advanced technologies and exceptional construction expertise, problems can still arise at the tunnel driving stage, not least due to the unpredictability of the rock strata encountered. In such cases, attendant measures need to be implemented so as to sustain the required rate of advance while also maintaining maximum safety. MC offers high-performance, reliable, fast and sustainable special-purpose injection systems for rock stabilisation and sealing, surface and joint waterproofing and crack and cavity remediation.

With the MC-Montan Injekt series, MC is able to provide a complete product portfolio of synthetic resin injection systems for water-stop, sealing and rock consolidation applications. This includes the product system MC-Montan Injekt FR / FN / FS. It is comprised of forcing, rigid polyurethane resins with variable reaction times from rapid "R" to normal "N" and slow "S". The combination system thus enables the reliable sealing and consolidation of rock, subsoil and structures under variable operating conditions. And not only in tunnel construction but also in other special-purpose civil engineering operations.

cement as a hybrid injection material has been tested with varying degrees of success to date.

The great benefit of hybrid injection systems
So what is special about this injection mix and the hybrid injection technology that goes with it? As regards the injection material, the great benefit derives from the improved effectiveness and economy achieved by combining the two components. The polyurethane resin supports and protects the cement from being washed away. Via the resin, which itself exerts a forcing effect, the hybrid adhesive filler can be controlled in its flowability as a function of the amount of water ingress encountered and size of the fissures in the rock. Control of the resin serves to accelerate or retard the chemical reaction, with adjustment of the ratio of resin to cement slurry providing further process adaptability. The special regulation and control architecture implemented ensures that all variation possibilities can be implemented as injection proceeds.

New control and pump technology
"The new control and pump technology from Renesco GmbH – Marti Geotechnik department (hereinafter referred to as Renesco) has facilitated a breakthrough in large-scale hybrid injection," explains Holger Graeve, global product manager for injection systems at MC. The partnership between Renesco and MC-Bauchemie began with the Stuttgart 21 project. In Stuttgart, extensive injection operations had to be carried out in the construction of various tunnel structures – some of them in critical rock zones using low-viscosity polyurethane resins. In addition to the exacting technical requirements, high demands were also placed on the environmental compatibility of the materials used for the synthetic resin injection work – not least because of the public's awareness of this major project. Specialist contractors were engaged to ensure that the injection campaign in Stuttgart was properly monitored and documented. Renesco had developed for this purpose a specially designed control system combining key instrumentation with advanced pump technology and newly

View into the more than two-kilometre-long penstock of a pumped storage hydroelectric power plant in Switzerland.

created software to facilitate BIM (Building Information Modeling). And it was the basis formed by these technical advancements that led to a revival of the idea of hybridising the injection process. The last piece of the puzzle came with further development of the applied control technology.

MC-Montan Injekt – The perfect partner for cement-resin solutions

With the MC-Montan Injekt series, MC has a product system proven to be ideal for cement-resin hybridising. The duromer resin causes the mixture to develop an immediate structural viscosity, thereafter giving rise to a firm support for the cement as it hardens. With advanced pump control technology, it is now possible to adjust the properties of the hybrid in almost any variation. It has been shown that the system works best with twenty to thirty per cent resin content. To produce the hybrid injection material, two mixing processes are required, one for the cement slurry and one for the reactive resin. First the cement slurry is prepared for injection. Concurrently, the two components of the polyurethane resin are prepared ready for subsequent mixing with a 2C pump and metered addition to the cement flow. The cement slurry and the polyurethane resin are then mixed immediately ahead of the injection channel. The injection pump for the cement slurry and the 2-component pump for the resin are connected via a control system that produces the desired ratio of mix. This enables the properties of the injection material to be adjusted continuously from very low viscosity (pure cement slurry or pure resin) to very stiff (high addition of polyurethane resin). The required flow properties can be adjusted during the injection process by varying the polyurethane resin content. Thus, when encountering changing geology, greatly varying fissure widths and fluctuating water inflow, it is possible to adapt the injection material to the specific conditions prevailing at each borehole without having to know in advance precisely what those conditions are. Essentially, this means that every injection operation starts with the pure cement slurry. If a pressure increase occurs in an injection channel, no polyurethane resin is added; it can be assumed that the small fissures encountered are being directly sealed by the cement suspension. If the injection material flows through without any pressure increase, polyurethane resin is added. This hybrid injection will reliably seal large fissures with water ingress. The remaining gaps are then filled without interruption to the operation by switching back to pure cement slurry.

Massive water ingress in a hydroelectric penstock

Example applications in gallery and tunnel driving illustrate how indispensable this process can be. During construction of the more than two-kilometre-long penstock of a pumped storage hydropower plant in Switzerland, a sudden inflow of water measured at 134 l/s occurred, which brought the heading operation to an abrupt stop. Until they came across this water vein, the tunnellers had driven exclusively into dry rock, consolidating and sealing any cavities that appeared using cement only. No matter how much cement was injected to seal this ingress, it was washed away in an instant. Exploratory boreholes revealed an increase in the fissure widths within the rock strata. The tunnel operator, who had previously spoken out against chemical injection systems, was soon convinced of the benefits of proportionate synthetic resin injection. The hybrid injection mode served to stop the water and allow cement injection to continue.

Hybrid injection with variable control

The variability of polyurethane-supported cement slurry injection constitutes the primary benefit of the new process. As an add-on to conventional cement injection, it significantly widens the application suitability of the latter. With pure resin injection, even powerful water flows can be stopped immediately. If, on the other hand, the water flow is more moderate and can be controlled with cement slurry injection, the cement is protected against being washed away by polyurethane resin build-up restricting ingress. The great advantage of this technology is that the reactive resin system can be adapted "just in time" to current operating conditions. So everyone is happy: The geotechnical engineers get to continue using cement, preferred due to the fact that it is both inexpensive and environmentally friendly; and the use of cement is actually extended to even extreme rock conditions thanks to supportive polyurethane injection. Holger Graeve is therefore quite sure: "Hybrid injection is destined to become established as a highly efficient, viable and variable option complementing cement slurry injection."

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THE BREAKTHROUGH IN HYBRID INJECTION HAS ARRIVED

“With this, we are able to combine the individual benefits of chemical and mineral injection systems.”
Holger Graeve

Holger Graeve has been with MC for almost thirty years. The civil engineer graduated in 1988 from the Hochschule für Bauwesen (College of Civil Engineering) in Cottbus, where he subsequently worked as a scientific assistant before joining MC in March 1991. As Global Product Manager, he is responsible for the Injection Systems portfolio and has been a key player in the development of the MC-Montan Injekt series. In this interview with MC aktiv, he details MC's expertise in the field of hybrid injection.

“With MC-Montan Injekt we have special injection resins that can also be ideally combined with cement slurries.”

Holger Graeve, why has MC-Bauchemie added the MC-Montan Injekt product group to its Injection Systems portfolio?
Tunnel construction is a rapidly developing “Field of Expertise” at MC. Although in the past we were better known as an injection specialist in building construction, we also focused on civil engineering injection applications. Our hydrogel injection systems, which have saved many a railway project, have also been used since the eighties and nineties of the last century for rock injection and consolidation in civil engineering projects. With our decades of injection experience, MC has finally made the leap to subterranean infrastructure projects. Here we have focused our activities primarily on the field of tunnel construction where the specific problems encountered required a degree of modification to our existing injection products. Thus the MC-Montan Injekt series was born.

What are the injection product systems of MC-Bauchemie?
Our products fall under four system headings: rigid materials, ductile materials, swellable hydrogels and silicate-based systems. And with the development of hybrid combinations, we are also now able to integrate and synergise the individual benefits of chemical and mineral injection systems.

What are the individual environmental aspects of these systems?
Where injection materials come into contact with subterranean water, any impact they have on that water must be brief and temporary. This is a principle of concern in Germany and one that is enshrined in the Water Resources Act. As a manufacturer of organic products, MC has always been fully focused on environmental considerations.

In our own interest when there were no approval requirements, we developed together with the Hygiene Institute of Gelsenkirchen the now widely used column test to detect and limit the effects of injectables on soil and groundwater. Today we are proud of a range of product systems with the corresponding environmental approval certifications. And we only use certified resins – whether for hybrid or standard injection applications.

What are the challenges of hybrid injection?
Hybrid technology presents challenges even for specialist companies. Essentially it is a two-component injection system comprised of a mineral and a chemical. On the resin side, it is essential to be able to exert full control over the very short reaction times that occur. And the same goes for the quantity ratio of cement to resin.

And the whole thing must function efficiently under constantly changing conditions several metres deep into the rock. Control systems have been developed that greatly assist the injection operatives in this regard. We should also bear in mind the working conditions that prevail in multi-shift tunnel construction. Injection specialists involved in such work have my deepest respect.

For further information on our injection systems, please go to:
https://bit.ly/2KCRlEL

MC CERTIFIED TO ISO 14001

Each year, MC-Bauchemie undergoes an audit according to ISO 14001, the internationally recognised environmental management standard. Due to the coronavirus pandemic, however, this year's scrutiny was postponed from March to October 2020. Thorough examination of our systems led to unreserved confirmation of our certification.

The international environmental management standard sets out globally recognised requirements for an environmental management system and is part of a family of standards that includes numerous other codes covering various areas of environmental management, including life cycle assessments, environmental indicators and environmental performance evaluation. ISO 14001 focuses on a continuous improvement process as a means of achieving the defined environmental performance objectives of an organisation.

Comprehensive environmental management system

MC-Bauchemie was one of the first chemical companies in Germany to be audited and certified according to both the quality management standard ISO 9001 and ISO 14001. The ISO 14001 certification audit takes place every three years. The objectives defined within this framework for a period of three years are additionally reviewed and confirmed annually by monitoring audits. With its environmental management system and extensive range of sustainability programmes, MC is pursuing the goal of improving its material and energy efficiency while also reducing water usage, emissions and waste. These undertakings are continuously monitored and their development is reviewed annually by external environmental experts, with the relevant data being recorded and published in the environmental report. This covers all environmental aspects of the operational processes and activities of the Bottrop site together with their direct and indirect environmental influences.

Established practice

The knowledge base and environmental awareness of MC's employees are continuously improved by means of appropriate information and regular training. A competition is also held based on environmental considerations. By adopting a "best practice" approach in relation to the application of the management system, we establish effective protective precautions at the co-worker, organisational, and technical level, thus contributing to effectively reducing impact on both people and the environment.

Current successes

In the past two years – a year ahead of the target date – filter dust in the powder tower has been reduced by 120 t through the total elimination of backwash cycles. The target for fuel oil consumption in bitumen operations was a reduction of 20% by 2020. However, the switch to more efficient heating and storage methods has actually resulted in a decrease of over 28%.

With the help of process optimisation measures such as the reduction of production times and use of energy-efficient motors, specific electricity consumption per tonne of finished product is set to decrease by 10% by 2021. Gas consumption is also to be significantly reduced by further production efficiency improvements. And there is a whole range of other measures and environmental programmes with which MC is constantly improving its environmental performance.

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MC AKTIV
CLIMATE-NEUTRAL AND SUSTAINABLE

MC compensates for the CO_2 emissions that inevitably arise as a result of printing MC aktiv by supporting a climate protection project recognised by ClimatePartner. This relates to the reforestation of woodland in various regions of Germany. The ClimatePartner seal is a guarantor of the climate-neutrality of our magazine. In addition, MC aktiv is printed on paper from FSC-certified sustainable forestry.

For further information, please go to:
https://bit.ly/3m5DrJ6

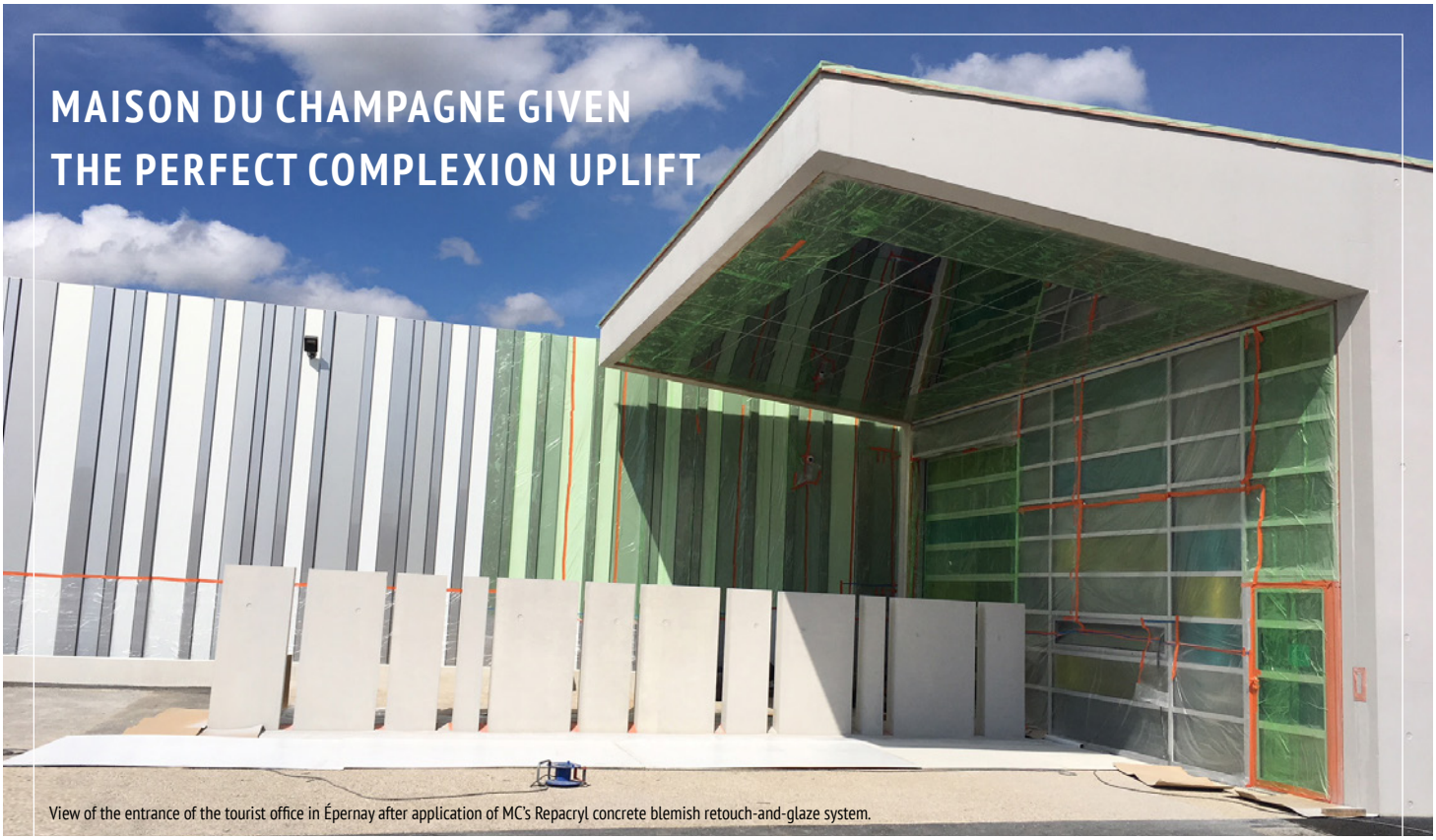
ENVIRONMENTAL AND CLIMATE PROTECTION THROUGH RECYCLING AT MC

MC-Bauchemie also makes an important contribution to environmental and climate protection by returning plastics, paper, cardboard, paperboard, wood and kraft paper bags to the recycling process. In 2018, this resulted in savings in Germany of 2,297 tonnes of resources, i.e. primary raw materials that are taken from nature to produce the above-mentioned materials, and over 394 tonnes of greenhouse gases*.

Certificate resources SAVED 2019 issued to MC

Source: Certificate resources SAVED 2019 / Calculation methodology by Fraunhofer UMSICHT based on data for 2018

MC's resource savings correspond to the mass of 5,417 fully grown apple trees, while the greenhouse gas emissions saved equate to that of around 340 standard truckloads.



MAISON DU CHAMPAGNE GIVEN THE PERFECT COMPLEXION UPLIFT

View of the entrance of the tourist office in Épernay after application of MC's Repacryl concrete blemish retouch-and-glaze system.

CONCRETE COSMETICS IN ÉPERNAY

Épernay is regarded by those in the know as the secret capital of the Champagne region in France. Now, its world-famous "Avenue de Champagne" has had an addition in the form of a newly constructed tourist office. Application of Repacryl retouching cosmetics to the concrete façade of the building left it with a blemish-free and aesthetically appealing fair-faced complexion.

Located some 140 kilometres east of Paris in the Marne département, Épernay is regarded along with Reims as one of the epicentres of French champagne culture. An estimated two hundred million bottles of world-famous brands of champagne are stored in the labyrinthine cellars of this small city of around 20,000 inhabitants. The legendary Avenue de Champagne in the city centre is considered to be France's most valuable piece of real estate alongside the Champs Élysées in Paris.

Unattractive appearance remedied

The region's new tourist office, known as the "Maison de Champagne", was erected here alongside the splendid edifices showcasing the major champagne producers. However, the new building's fair-faced concrete façade – exposed once the formwork had been removed – had an unattractive appearance that fell short of the client's expectations. It was therefore decided to have the façade visually enhanced by BEC Construction using MC concrete cosmetics. BEC had successfully used the system on several occasions, including a retouching project involving the concrete façade of the Le Zash office complex in Bezannes, France. The company CONTREAT was selected to carry out the work. Lucas Loupe, area manager for Infrastructure & Industry at MC in France, was responsible for overseeing the project on site.

Attractive, blemish-free fair-faced concrete

MC's purely acrylic dispersion Repacryl was used to achieve an appealing, homogeneous appearance across the concrete surfaces of the Maison du Champagne. Repacryl is based on exclusively mineral pigments, is UV-stable, weather-resistant and light-fast, making it the ideal solution for upgrading exposed concrete surfaces. It is available in three greys which are miscible so that any concrete-matching nuance can be created. The Repacryl mix was applied in the Épernay project using the spray technique, which meant that the work was soon finished. The result: The unwanted colour differences in the fair-faced concrete were eliminated to leave an aesthetically attractive, uniform and blemish-free surface. Thus, the modern façade of the Maison de Champagne is able to more than hold its own in the midst of the high-calibre, classical environment created by the most famous champagne houses in France.

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STRASS SEWAGE TREATMENT PLANT, TIROL

WELL EQUIPPED OR THE FUTURE

As part of a planned expansion project, the municipal sewage treatment plant in Strass, Austria, has been undergoing extensive rehabilitation since 2019. With the operator insisting on high quality and convincing sustainability in the solutions applied, MC-Bauchemie's special MC-RIM PROTECT coatings have been selected for the sewage-handling facilities.

The village of Strass lies in the Zillertal valley of Austria's Tyrol region, halfway between Kufstein and Innsbruck. Boasting no more than around 850 inhabitants, it is the location of Tyrol's second largest municipal sewage treatment plant. It currently treats the wastewater of 31 municipalities with 52,000 inhabitants and 8.5 million overnight guests per year, handling an average daily volume of over 28,000 m^3.

Expansion and rehabilitation

The facility operator, Abwasserverband Achental - Inntal - Zillertal (AIZ), decided in 2018 to expand the capacity of the sewage treatment plant commissioned in 1989 from 167,000 to 200,000 PE. PE stands for "population equivalent" and indicates the number of inhabitants living in the catchment area of a wastewater treatment installation. The expansion project was to be accompanied by extensive rehabilitation and optimisation of the treatment plant over several years. In June 2019, work began on the first of four low-load biological basins with around 1,500 m^2 of wall area and 540 m^2 of floor area requiring rehabilitation. The basin was completely enclosed for the duration of the repair work in order to exclude as far as possible weather influences and work interruptions due to precipitation. At the same time, a short-term challenge also arose: Substrate preparation with high-pressure water jetting revealed that the surface tensile strengths of the existing concrete were below par. On the advice of MC sales representative Hubert Schiffbänker, client AIZ and the coating contractor carried out a series of cost-efficient remedial measures aligned to consolidation and durable protection of the concrete, with no negative impact on the project schedule going forward.

Sustainable surface protection

For example, the wall surfaces were coated with MC-RIM PROTECT, a highly sulphate-resistant, fibre-reinforced surface protection coating formulated for use in the sewerage sector, which was applied in a layer thickness of 7 mm above the exposed aggregate tips. The floor surfaces were coated with MC-RIM PROTECT-H, especially developed for application on horizontal substrates in the sewerage sector, with a layer thickness of 10 mm above the exposed aggregate tips. Both products of the MC-RIM PROTECT system are characterised by their chemical resistance in the range pH 14 to pH 3.35, very high resistance to chlorides and high mechanical resilience. They are also resistant to extreme temperatures, freeze-thaw cycling and de-icing salts They exhibit total porosity values well below those required by German code DVGW W 300-5, thus confirming their extremely dense structure offering maximum protection.

The client was fully satisfied with the systems used, the speed and high quality with which the work was performed, and also the support provided along the way, all of which enabled the rehabilitated basin to be recommissioned on schedule in September 2019. Leveraging the excellent experience gained, work on the next low-load biological basin with the same rehabilitation system commenced in April 2020.

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DÜSSELDORF AIRPORT RAINWATER HARVESTING BASIN REHABILITATED


Photo: Amiblu GmbH

At Düsseldorf Airport, a large-profile rainwater collector had to be rehabilitated below two runways in order to ensure its long-term service life and leak-tightness. A combination of ombran MHP-SP, the concrete-protecting mineral coating from MC, GRP pipe lining and stainless steel inner collars was chosen for the repairs. The refurbishment began in the summer of 2019 and, thanks to a masterly logistical concept and excellent cooperation between all those involved, was successfully completed in early 2020 without disrupting flight operations.

For further information, please go to:
https://bit.ly/3m0zrK2

TUNNEL EXPERTISE IN DEMAND

Expansion of the Sušak Tunnel in Rijeka

In Rijeka, Croatia, an ambitious infrastructure project was successfully completed after some two years of construction work. During the large-scale rebuild of Brajdica freight station, the 400-metre-long Sušak tunnel was also extended and repaired.

The development of the multimodal platform of the Port of Rijeka, Croatia's third largest city with almost 130,000 inhabitants, and the link-up with the Adriatic Gate container terminal, is a joint project of the Port Authority of Rijeka, HŽ Infrastruktura d.o.o. and the consortium KOLEKTOR KOLING d.o.o. and EUROASFALT d.o.o. The total value of the project located at Kvarner Bay on the northern coast of Istria is € 35.6 million. It includes the construction of a new container terminal, the reconstruction and renovation of the existing Rijeka Brajdica freight station and the extension of the existing Sušak railway tunnel.

Faster construction progress with setting accelerators from MC

The tunnel project specifications included the challenge of carrying out the requisite expansion measures as far as possible without disrupting regular rail traffic. For the lining and coating of the interior of the tunnel, EUROASFALT d.o.o. from Bosnia put its faith in MC's know-how in tunnelling solutions coupled with the application expertise of specialist contractor Lepen d.o.o. The work involved placement of 400 tonnes of MC-Montan Shotcrete HA 01 to cover the inner walls of the tunnel. MC's alkali-free setting accelerator has been especially developed for shotcreting, whether by wet or dry spraying, and specifically for shoring measures in tunnelling and mining. It provides for high early strength and, by enabling layer thicknesses of 15 to 20 cm per pass, facilitates significantly faster work progress, as well as helping to reduce dust formation.

Sušak Tunnel – visually upgraded and ideally protected.

Tunnel linings visually upgraded

In the second phase, the interior wall surface of approximately 12,000 m^2 was primed with the water-dispersed epoxy resin sealant MC-DUR 111 D transparent, followed by a permanent waterproofing coat of MC-DUR 111 D in RAL 9001. This provided the mineral substrate with protection against mechanical stress and chemical attack while also imparting an attractive visual appearance. MC-DUR 111 D will adhere even to slightly damp mineral substrates and is resistant to water exposure, dilute acids and alkalis, plus a variety of organic chemicals.

Work on the Rijeka Brajdica project was completed in July 2020. Since then, the technical advantages that have come with this major project have facilitated integration within the trans-European rail network, the aim being to switch more container traffic to rail and thus reduce road traffic volumes and the associated air pollution.

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SCREED-LAYING IN THE 5-STAR BUILDING COMPLEX

CINNAMON LIFE IN COLOMBO

This night-time visualisation of the completed Cinnamon Life building complex in Colombo, Sri Lanka, cannot fail to impress.

Photo: Cinnamon Life

Sri Lanka's capital Colombo is one of the emerging cities in South Asia. A 4.5 million m² "city within the city" is currently being created here with the Cinnamon Life building complex. This mammoth project is the first highlight in the still young alliance in Sri Lanka between MC India and its new partner Hayleys Aventura (Pvt) Limited.

Colombo looks back on a long and eventful history. Thanks to its natural harbour, the metropolis has attracted merchant ships from all parts of the world for over 2,000 years. To this day, the area around the harbour – known as Slave Island – remains the commercial and cultural centre of the city. The ultra-modern building complex Cinnamon Life, designed by the Sri Lankan-British designer and artist Cecil Balmond, is due for completion here in mid 2021. The mixed-use construction will include entertainment facilities, 427 private apartments, 30 floors of commercial office space and five floors of retail outlets. The heart of this iconic real estate, already nicknamed "Colombo's Life Capital", will be the 5-star Cinnamon Hotel. With 800 rooms, 50 suites as well as versatile banquet and conference rooms for more than 4,700 people, the hotel has been conceived to meet the growing demand forecast for Colombo in the future.

Good screed pumpability and workability essential

Following the signing of a cooperation agreement between Sri Lanka-based Hayleys Aventura (Private) Limited and MC India as recently as September 2019, the two partners have now completed their first major joint project in Colombo. S&T Interiors and Contracting, a subsidiary of Hayleys, was commissioned to plan the interior design of this extraordinary hotel complex. Among the challenges encountered, a solution had to be found to pumping the screed concrete over longer distances allowing efficient placement on a floor area of approx. 13,600 m² extending across the huge construction site. In particular, the laying contractor, Tudawe Brothers (Pvt) Ltd. from Colombo, needed the guarantee that the screed would remain readily workable over a sufficient period of time.

Construction progress: Slowly but surely, the building complex continues to take shape.

High-performance superplasticiser as the key to success

During the preliminary trials, closely monitored by an application engineer from MC India, a high-performance superplasticiser from the MC-TechniFlow series, based on the latest PCE generation, was found to produce the best results, finally convincing the planning engineers that a solution to the problem had been found. Just small quantities are sufficient to achieve very good screed flowability, easy pumpability and very good workability. It is further characterised by a reduction in the effort required during placement, spreading and compaction, as well as a high-quality surface finish.

By the time the huge construction project in Colombo is completed, around 80,000 litres of high-performance MC-TechniFlow superplasticiser will have been shipped from India to Sri Lanka – a real logistical challenge for MC in India, which has so far successfully managed this, the first project of this size involving a neighbouring country.

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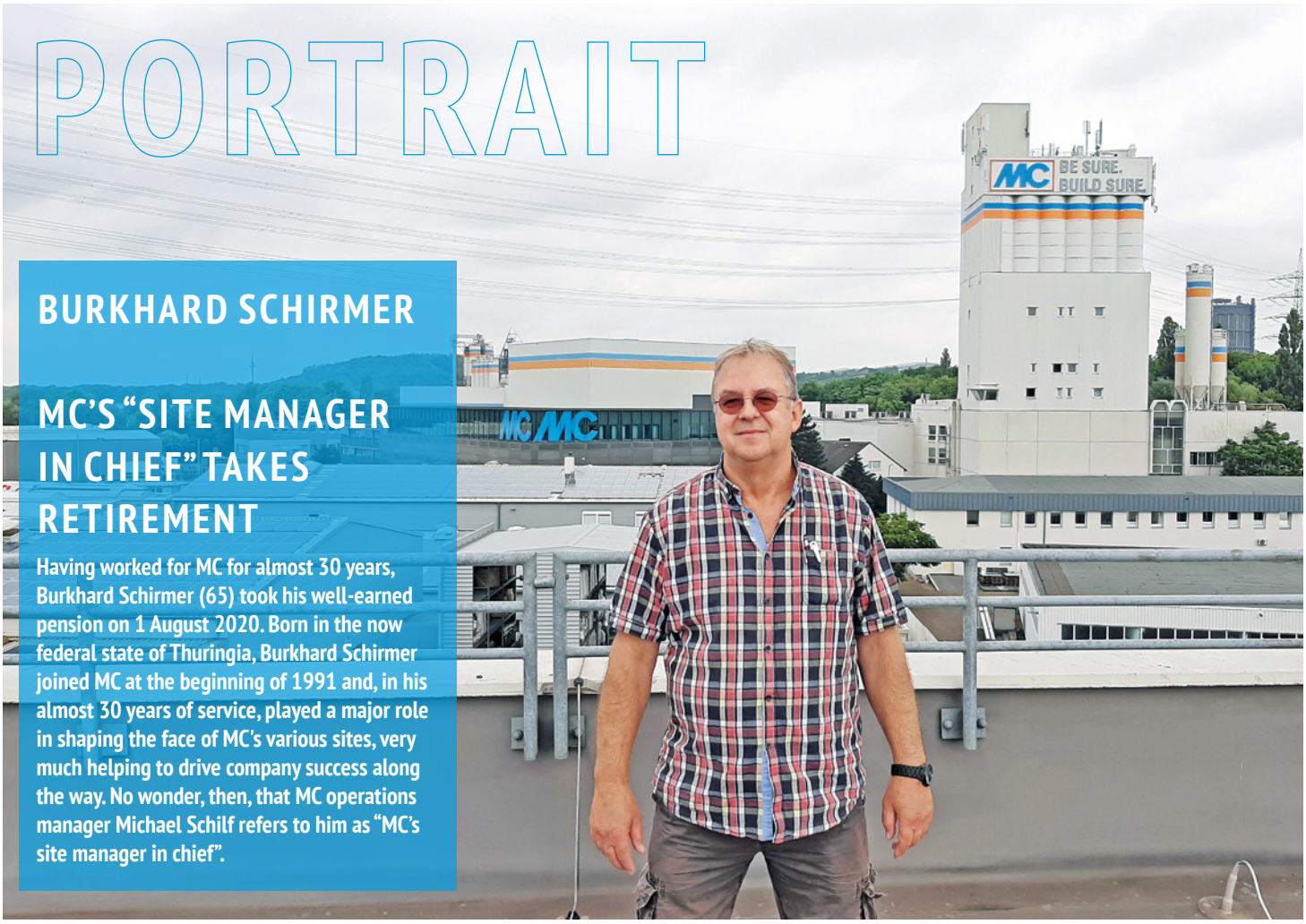
PORTRAIT



BURKHARD SCHIRMER

MC'S "SITE MANAGER IN CHIEF" TAKES RETIREMENT

Having worked for MC for almost 30 years, Burkhard Schirmer (65) took his well-earned pension on 1 August 2020. Born in the now federal state of Thuringia, Burkhard Schirmer joined MC at the beginning of 1991 and, in his almost 30 years of service, played a major role in shaping the face of MC's various sites, very much helping to drive company success along the way. No wonder, then, that MC operations manager Michael Schilf refers to him as "MC's site manager in chief".

The mechanical engineering graduate's main responsibility involved implementing investments in new plant at MC's German sites and ensuring compliance with the legal regulations and requirements that applied to such undertakings. One of the facilities for which he was responsible from planning to implementation was the emulsion plant commissioned in 1994. This was followed by many more key projects: From the construction of the powder tower, the training centre in Bottrop, facilities for the service centres in Zwenkau and Esslingen, not to mention the PCE plant, to the new MC Bottrop building including extension of the loading bay and the redesign of the entrance area. He was also chiefly responsible for installations subject to mandatory inspections and TÜV safety certification. "The special thing about MC is that all facilities are planned and implemented by ourselves according to the individual wishes of the plant management and the executive board," explains Schirmer. "That means the know-how remains in-house and we also save a lot of money by performing our own project planning and coordination work." Compared to project management by a firm of planning engineers, this can mean savings of up to 50%.

Burkhard Schirmer was highly valued by his superiors, colleagues and employees alike for his open, honest and humorous manner – not to mention his 100% reliability. We wish him a long and happy retirement! 😉

INTRODUCING: NINA OLBRICH

FROM APPRENTICESHIP STRAIGHT TO THE NETHERLANDS

Most trainees find themselves in calmer waters after completing their apprenticeship because they can at last leave college behind and concentrate fully on their work. In the case of Nina Olbrich (22), however, a new challenge immediately appeared on the horizon. "If someone had predicted in the past that I would go abroad and work, I would not have believed it," says the young woman from Oberhausen. But things sometimes turn out to be far different from the way one imagines. 😉 Having seen through her apprenticeship in industrial management at MC-Bauchemie from August 2017 to January 2020, she joined the back office of our MC company in the Netherlands in February this year. We wish her all the best and every success!

All the best & every success!

BOOK LOTTERY

AND THE WINNER IS ...

In the last MC aktiv issue we announced a lottery with the book "EXPLEURASIA19", a tale of 42,024 kilometres solo through Eurasia, by our globetrotting Swiss sales colleague Ilyas Demiriz as the prize.

And the name we drew out of the hat was that of Margit Prausch of our Esslingen site.

So congratulations, Margit, and enjoy the read! 😉

PERSONNEL NEWS

ALINE VON GRADOWSKI (27) was appointed MC's Head of Logistics Projects as of 1 August 2020. She started with MC as an apprentice industrial manager in August 2013 and successfully completed the course in 2016. She was then taken on as a logistics scheduler. In her new function, she is responsible within the logistics field for the planning and implementation of projects, the optimisation of processes, and digitalisation.

MAX HANKE (34) assumed the position of MC's Head of Project Management as of 1 August 2020. He had already been with MC for three years, during which time he was familiarised with this role by his predecessor, Burkhard Schirmer (see Portrait, page 18). A graduate mechanical engineer, he is responsible for managing investment projects at the various MC sites in Germany from planning right through to hand-over, and also for the mandatory inspection and TÜV safety certification of relevant installations.

JULIAN HÜBNER (29) was appointed Product Manager for masonry repair systems within the IN division at MC on 1 September 2020 after having successfully passed his civil engineering finals. He joined the division as a student trainee in July 2017. His management responsibilities entail ensuring the support, upkeep and further development of the existing portfolio coupled with the development of new products.

BENEDIKT NIEWALD (31) was appointed to the position of Product Manager for flooring systems as of 1 October 2020. After successfully completing his master's degree in sales engineering and product management a little more than four years ago, he began his career at MC in the Flooring Sales back office. He is now responsible for the entire product range in the floor coatings domain, focusing inter alia on the upkeep and further development of the solutions MC offers.

DR. JONAS TENDYCK (27) joined MC on 1 November 2020 as Team Leader Resin Flooring Product Management. After completing his master's degree in chemistry at the WWU (University of Münster), in 2018 he took his doctorate there, qualifying in June 2020 with a thesis covering research into inorganic structural chemistry. From 2017 to July 2020 he worked as a research assistant at the Institute of Inorganic and Analytical Chemistry, also at the WWU.

PEOPLE AT MC -

WHAT MAKES AN AREA MANAGER?

The answer to this question comes in the form of a video about area manager Luzian Haida. In it, viewers are offered a brief insight into his work as a sales representative at MC. It deals with his field sales tasks and duties and the people with whom he works as an area manager. Luzian describes his daily routine and tells us how he feels about being in the employ of MC. Interested? Then do take a look at the video.

To access the video (German only) with and about area manager Luzian Haida, please go to:
https://youtu.be/Dc58ePHhWWc

Taking fresh concrete to a new level

MC-PowerFlow evo

Super-high performance even under challenging conditions

To live up to their name, superplasticisers must enable precise consistency adjustment, ensure optimised concrete rheology and offer total dependability. However, the use of recovered process water and recyclates, not to mention primary starting materials of fluctuating quality, have made achievement of these objectives difficult in the extreme. Until now.

The new high-performance superplasticiser MC-PowerFlow evo is robust, efficient and ensures reliable attainment of specified fresh and hardened concrete properties, even when the inputs are less than ideal. Want to know how to get reliable high performance out of your fresh concrete? Talk to us!

EXPERTISE
ADMIXTURES & ADDITIVES

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BE SURE. BUILD SURE.