

Customer magazine

# up<sup>2</sup>date

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## THE HIGHEST LEVELS OF SAFETY

BUCHEN SafetyService extends its range of services for industrial businesses, firefighters and the emergency services

### Services

XERVON's maintenance division performs four major turnarounds almost in one go

### International

XERVON Sweden develops smart weather protection systems for building renovation projects

### Group News

BUCHEN takes over a wide range of logistics services for the BP refinery in Gelsenkirchen in cooperation with REMONDIS

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## EDITORIAL

### Dear Readers,

Keeping a close eye on the market, having a feeling for innovative trends and anticipating our customers' needs – this is our mission each and every day. BUCHEN's expansion of its SafetyService division is a perfect example of how we turn our observations into successful business ideas. An ever growing number of customers wish to hand over the administration of their safety equipment – e.g. the paperwork, storage, servicing, maintenance and supply – to specialists. Which is why we decided to build a new centre at the chemicals park in Leuna (Germany). Our qualified staff make the very most of the state-of-the-art workshops there to ensure our customers have access to high quality safety materials and equipment whenever they need them. Both the fire brigade and the emergency services can also benefit from these services now.

Another division offering highly specialist services is BUCHEN's emergency management team. These colleagues step in to deal with particularly risky situations. Such as a recent case in Bonn, which was closely covered by the regional press. Our emergency management colleagues stepped up to the mark – confidently handling this challenging case so that no-one was put at risk!

XERVON's collaboration work with Henkel is a further example of how we are constantly on the look-out for novel solutions. Being a certified applicator of the Loctite® Composite Repair System, we are able to offer our customers this reliable and cost-effective service to repair their damaged pipes at refineries, petrochemical plants, power stations etc. – instead of having to replace them which would be a far more expensive undertaking. Once again, the positive response of our customers has confirmed that this concept is meeting their needs.

We are, however, looking at extending our business into new fields, as well – such as our latest project for the BP refinery in the German city of Gelsenkirchen. BUCHEN is now responsible for providing extensive logistics services at the plant that cover both waste management and the on-site transport of materials. This is a great illustration of how we are able to pool together the specialist skills of the REMONDIS Group and offer our customers a comprehensive range of services from one and the same company.

This issue of up<sup>2</sup>date also underlines the expertise of XERVON's scaffolding division. The company has become one of the leading providers of complex scaffolding structures in Germany and other European countries and is able to draw up solutions for the most challenging of projects – no matter whether it has to do with logistics, volume of materials or structural engineering tasks. Be it at the top of a mountain, at an industrial plant as part of a service agreement or the classic façade scaffolding business: there are only a handful of companies able to cover such an extensive range of services. Moreover, XERVON in Sweden is making a name for itself as a specialist for smart weather protection systems, helping to ensure their clients can complete their projects on schedule despite the adverse weather conditions.

We hope that this issue provides you with an interesting insight into our portfolio of services. No doubt you will get to read about a service that you perhaps hadn't known about before so that we can offer it to you, too. Simply get in touch with us, if you would like to learn more about a certain subject!



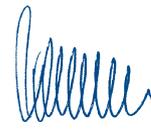
Hans-Dieter Behrens



Matthias Ebach



Franz-Josef Englisch



Olaf Karrass



Carsten Lange



Jürgen Lennertz



Andreas Rittel

# On the safe side

## BUCHEN SAFETYSERVICE – SAFETY EQUIPMENT FROM THE PROFESSIONALS

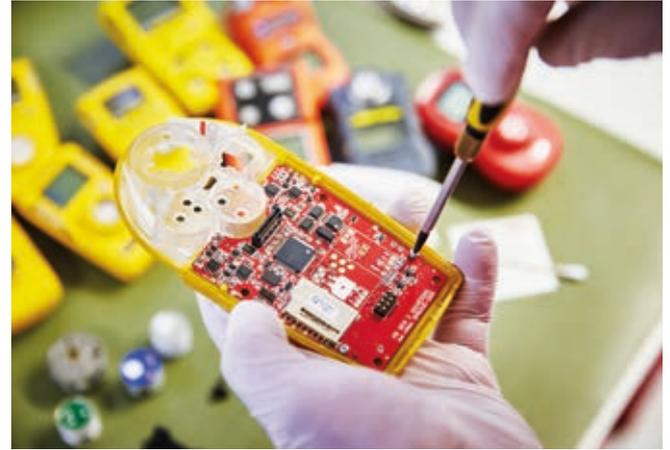
BUCHEN UmweltService GmbH is continuing to systematically grow its SafetyService division and has become one of the leading providers of bespoke concepts for managing safety technology. Having extended their portfolio, the BUCHEN safety specialists are now offering their comprehensive range of services to firefighters and the emergency services so that they, too, can benefit from their know-how and expertise as well as their industrial customers.

Having served the chemical and petrochemical industries for so many years now, BUCHEN has in-depth knowledge of safety technology and knows all about the special requirements of this field. It has pooled together its specialist areas of expertise to create its SafetyService division, enabling it to offer an exceptionally wide range of services – from acting as consultants for safety technology, to servicing, hiring out and selling such equipment, all the way through to training people how to use it.

“As we are not tied to any particular manufacturer, we are able to give independent advice and develop interesting concepts and bespoke solutions that are cost effective and provide the highest levels of safety and material availability,” explained BUCHEN managing director, Jürgen Lennertz, who is in charge of the SafetyService division. Project manager, Olaf Waterstrat, added: “Our safety logistics solutions are as wide-ranging as the requirements of our potential customers whether they run an industrial business, a fire brigade or one of the emergency services.”



BUCHEN also supplies the emergency services and firefighters with an extensive range of technology for their operations – including personal protective equipment



The safety equipment is serviced by experienced technicians in BUCHEN's own service centres

Our work is guided solely by the safety requirements of our customers and we work with them to develop detailed concepts and ensure these are implemented in the most effective way. If requested, we can even take over all aspects of managing safety equipment, including keeping an eye on testing intervals, servicing the devices and documenting when the equipment is handed out and returned.”

There are a number of very good reasons why customers choose to collaborate with the experienced SafetyService specialists and make the most of their comprehensive services. These include:

- Maximum levels of availability
- Monitoring & observing of testing intervals
- Detailed documentation
- Precise quantities of stock
- Reduced stock loss
- High & uniform safety standards; always in line with the latest technology.

#### State-of-the-art service centres

One way that BUCHEN has chosen to grow its SafetyService division has been to expand its existing accredited service centres as well as to open new centres. One example of this can be found at the chemical park in the German city of Leuna, where BUCHEN opened one of the largest and most

modern service centres for safety technology in Europe at the beginning of April; another centre is currently being built in Cologne. All possible types of industrial safety equipment can be hired or bought at these centres, with the BUCHEN service technicians working there to hand out, take back, service and repair the various devices – from breathing apparatus, gas detection technology and fire extinguishers, to gloves, safety goggles and full body protection, all the way through to fall arresters and safety equipment for a whole range of special situations. Such equipment is always from well-known manufacturers who can be relied on to deliver top quality products at all times. Moreover, the company's long-standing collaboration work with the various manufacturers means customers have access to the latest technology at competitive prices.

Materials can even be handed out and returned 24/7 thanks to the company's smart dispenser systems. The equipment needed by the customers can be hired or purchased as required and is always serviced in accordance with the same stringent safety standards. A complex procedure that ranges from recording the details, to the cleaning, disinfection, repair and testing of the materials, all the way through to the packaging. All information and maintenance schedules are stored in the rental system and can be accessed by all the service centres.

BUCHEN also offers dispenser systems so that materials can be handed out and returned 24/7

“Our safety logistics solutions are as wide-ranging as the requirements of our potential customers whether they run an industrial business, a fire brigade or one of the emergency services.”

Olaf Waterstrat, Project Manager

### Using life-saving technology correctly

As knowledge means safety, BUCHEN's SafetyService division also passes on its extensive know-how to its customers, providing them with both theory and practice – with a clear emphasis on practical use. Priority here is put on showing how to use the products correctly and effectively in line with the manufacturer's instructions and legal regulations.

BUCHEN also holds courses at its new service centre in Leuna to teach participants how to use their safety equipment properly

All types of courses, therefore, are being held at the seminar rooms at the service centre in Leuna which have been equipped with the latest technology. Depending on the subject being taught, these are either held by BUCHEN's own specialists or in cooperation with manufacturers. The company's training programme focuses on two main areas: showing the participants how to use their life-saving equipment properly as well as holding seminars for operatives so they can specialise in a range of different areas relating

to safety technology and equipment. At BUCHEN's training centre in Voerde (Lower Rhine region), for example, the participants are able to practise using their respiratory protective equipment under realistic conditions.

### A great response

BUCHEN and its SafetyService division have developed an excellent range of safety equipment and there has been a great response from the company's customers for these services. This can be seen both by the number of visitors to the new service centre in Leuna and by the reactions at the special events where the SafetyService specialists have been showcasing their business – for example at the conference in Wernigerode for gas detection specialists at the beginning of March or the RETTmobil in Fulda, Europe's leading exhibition for rescue and mobility.



The company's stand – with its new, open plan design – attracted many visitors at the RETTmobil

### A SUCCESSFUL EXHIBITION

BUCHEN SafetyService showcased its business at the RETTmobil Exhibition for the first time ever this year, which was held in Fulda from 11 to 13 May. Covering 70,000 square metres, this event is considered to be the leading exhibition for rescue and mobility in Europe and it attracted a record number of visitors this May. According to the organisers, the exhibition is "the first address and indispensable platform for all full-time and honorary rescuers and volunteers from rescue organisations". It also clearly demonstrates the high standards of the rescue services in Germany which are acting as a role model for organisations from abroad.

A large number of people visited BUCHEN's stand during the event to learn more about their services and see the products being used. They were particularly interested in the fully functional dispenser. "These dispenser systems are one part of the smart, bespoke concepts that we draw up to guarantee that safety equipment is available at all times. These dispensers can be used in a variety of ways to enable safety equipment to be handed out or returned 24/7 without a member of staff having to be present," explained Olaf Waterstrat, SafetyService project manager, who believed their time at the exhibition was a "great success".

# Top quality drinking water

## BUCHEN CLEANS AND DESCALES DENITRIFICATION REACTORS AT A WATERWORKS

BUCHEN Tank- und TurnaroundService's specialist chemical industrial services division recently completed a successful pilot project to clean and descale the denitrification reactors at a large waterworks located in the German region of Lower Franconia. What was so special about this project was that the company was able to carry out its work without the operations at the plant having to be interrupted.

On average, 1,000 cubic metres of drinking water are produced at this waterworks every hour using a special automated system. The water – pure groundwater extracted from seven different wells – undergoes a total of three processing stages before it is fed to around 130,000 consumers. During the first stage, lime water is added to the raw water to decarbonise it, i.e. to soften the water and achieve a water hardness level of 13°dH (German degree of hardness). The substances that create the hardness are removed using flocculation. This generates around 10 tonnes of lime sludge every day. The second stage, the so-called denitrification stage (removal of nitrate), takes place in large reactors. Special microorganisms are used here to transform the nitrate and remove it from the water, reducing the nitrate content from approx. 63 mg/l to between 25 and 35 mg/l. The water is then ready for consumption after it has gone through a final cleaning, disinfection and multi-stage filtration process.

Having been in operation for fifteen years, the denitrification reactors had become so clogged up with lime sludge last year that it was beginning to have a major impact on the amount of water able to be treated by the waterworks. The operators, therefore, decided to look around for a solution that would enable the reactors to be cleaned and descaled efficiently. The contract was awarded to BUCHEN's specialist chemical industrial services division, which treated the first four of these reactors (each able to hold around 100 cubic metres) in a pilot project.

"Our client was won over by our technical concept," explained Rolf Grzesny, the manager at BUCHEN responsible for the project. "Having worked with acidic solutions and cleaning technology for so many years now, we were able to develop a special process that was perfect for this particular case." Priority here was put on descaling and cleaning

the reactors in as short a time as possible without having to interrupt the water treatment operations.

The suggestion put forward by BUCHEN involved rinsing the reactors – simultaneously – with diluted hydrochloric acid. The cleaning experts made the most of the fact that the solution used to descale the first reactor was still acidic and so could be re-used. It was, therefore, fed into the next reactor while the previous one was still being treated. "This sped up the whole process," Rolf Grzesny continued. Throughout the cleaning work, the experienced team kept a particularly careful eye on the amount of gas being produced in the reactors – this is a reliable way of determining the intensity of the chemical process: "The reactors have been designed to have as big a surface area as possible. Large surfaces mean that a large amount of gas can escape from the liquid within a very short period of time. It's important, therefore, to constantly observe how much gas is produced and to adjust the acidity levels accordingly. This meant we could control the chemical reaction so that it worked particularly effectively whilst ensuring the whole procedure was safe and no-one was put at risk."

During the project, the cleaning experts removed a total of around 78 tonnes of lime from the denitrification reactors, for which it needed approx. 170 tonnes of concentrated hydrochloric acid. The customer was very satisfied with the results of this pilot project and has already indicated that there are good prospects of there being a similar project next year.



The reactors were cleaned and descaled without the water treatment operations having to be interrupted

## 1,000m<sup>3</sup>

On average, 1,000 cubic metres of drinking water are produced at the waterworks every hour using a special automated system

# An explosive legacy



## HIGHLY DANGEROUS PESTICIDES SAFELY REMOVED

Having recently inherited a house in the Muffendorf district of Bonn, the new owners decided to travel to the property to clear it out. During their tidy up, they discovered some old rusty metal drums, some of which had a sticky yellow substance oozing out of them. They could also see some faded warning labels that made it very clear that whatever was in the containers was poisonous. The family immediately rang the fire brigade, who then called in BUCHEN UmweltService's emergency management team. Removing these containers proved to be a difficult business and not one that the operatives get to do every day.

The substance had been stored in five 10kg containers under the roof of a dilapidated outbuilding – and had probably been there for a very long time. One of the containers was broken; a second was corroded and had lost its lid. It very quickly became clear to all those present that this was a job for highly trained specialists as the substance was a pesticide that had been banned many years ago. The pesticide had reacted with the metal and turned into a highly explosive mixture. Sensitive to movement, pressure, friction and changes in temperature, the chemical might explode at any time – and have the same effect as 20 kilograms of TNT.

drums that were leaking their contents. BUCHEN's sister company, XERVON, had erected scaffolding around the outbuilding to ensure that the operatives had a safe platform to work from. A sprinkler system had been attached to the scaffold as well as a camera that could be used to monitor the inside of the building. The sprinkler system had been designed by the company itself and was made primarily of plastic. Standard metal systems were out of the question – they would turn into dangerous missiles if the chemicals exploded.

### Stringent safety standards

All properties within a 100-metre exclusion zone were evacuated during the first day. Once everyone had left, the team moved in and used the sprinkler system to sprinkle the room under the attic with water as the chemical had dripped through the planks to the area below. One of BUCHEN's high performance vacuum / cleaning trucks was

Not a budding astronaut but an operative specially trained to handle dangerous substances



A rapid response team: BUCHEN's 24-hour emergency management division ensures pollution incidents are handled safely

### A concept of individual steps and processes

BUCHEN's emergency management team got straight down to work. "We started contacting people in our network, acting as general contractor to make sure we had the right specialists on hand to do the job," explained Gero Buchartz, head of the company's emergency management division. Working together with a crisis management group consisting of representatives of the fire brigade, the state office of criminal investigations and the bomb disposal squad as well as the environment agency and the local regulatory office, a suitable concept and fixed schedule were drawn up within no time at all.

The first step was to dampen down the chemical wherever it had escaped to reduce its reactivity. Once that had been done, the substance was carefully removed from the two





The police and fire brigade cordoned off the area so the drums could be removed

All the neighbours were evacuated from their homes

brought in to remove the liquid. Next, the room was cleared out and filled with Styrodur polystyrene boards to support the rotten wooden ceiling. The operatives, kitted out with special measuring equipment, had to wear chemical protective suits and respirator masks.

The following step was the trickiest part of the operation: using the sprinkler, the poisonous substance was washed out of the damaged drums. Thanks to the CCTV system, the water pumps could be controlled from a safe distance. A special basin was used to collect the water and transfer it to a special container so that practically all of the water was able to be recovered. BUCHEN's vacuum / cleaning truck was deployed here, too, to remove any spillage from the floor – which had been sealed off before the work began – and to pump it into special containers. Five hours later, the team were able to relax after all of the contents had been washed out and safely stored.

### Great team work

The next day was spent removing the sealed drums. This time, however, only the immediate next-door neighbours had to leave their homes as the risks were considerably lower. After the roof had been removed from the outbuilding, the team were able to get a good look at the drums which appeared to be stable and undamaged. The XERVON scaffolders moved in to adjust their scaffold and set up a support system with a remote-controlled hoisting device. One by one, the drums were carefully lifted out of the building, placed in an insulated transport container and then loaded into an explosion-proof spherical container attached to the bomb disposal squad's special trailer.

BUCHEN also carried out the follow-up work: professionally packing and removing all the contaminated materials and cleaning all the surfaces affected by the pesticide. All of those taking part agreed that the collaboration work between the teams had been excellent – it could not have gone more smoothly.

The emergency team expertly coordinated the different tasks – ensuring that all rules and regulations were adhered to at all times



The substance had been stored in five 10kg containers under the roof of a dilapidated outbuilding

# First task: a major turnaround project

## XERVON DEMONSTRATES ITS EXTENSIVE SCAFFOLDING EXPERTISE

XERVON's new scaffolding service agreement with the cement producer Holcim (Deutschland) GmbH, one of the largest manufacturers of building supplies in Germany, kicked off with a major turnaround project. An extremely successful debut which has generated enquiries for the company's other areas of expertise.

The plant in Lägerdorf in the German state of Schleswig-Holstein has been producing cement for over 150 years now and is today a modern cement works with around 320 employees. Lägerdorf is situated on a layer of extremely pure chalk (approx. 400 metres deep) that stretches all the way up to the Earth's surface and is used as a raw material to produce the cement. Holcim (Deutschland) GmbH belongs to LafargeHolcim, the world's biggest manufacturer of construction and building materials.

Located on a plain, the Lägerdorf cement works and its 80-metre pre-heater tower can be seen for miles around. The company has been relying on XERVON's scaffolding expertise since December 2015, having signed a service agreement with them that covers all scaffolding tasks needed at the site – from regular maintenance work all the way through to turnaround projects.

"During the tender process, we succeeded in showing just how strong and effective the company is," explained XERVON branch manager, Michael Stiebitz, who was really pleased to see this new contract being awarded to the Rellingen branch. "We were able to highlight our strengths – for example that we are able to supply large teams of operatives and substantial amounts of materials at very short notice. In addition to this, the client was impressed by our comprehensive quality, health, safety and environmental concepts," Michael Stiebitz continued.

XERVON project manager, Heiko Kranig, is the man in charge on the ground in Lägerdorf. He has years of experience of this industry having already worked as a scaffolding expert at another German cement works in the past. Today, he organises the day-to-day work of the scaffolding team who are permanently on site in Lägerdorf to carry out any tasks that may be needed. He summarised their work, saying: "We have to perform a whole range of scaffolding tasks for the plant here – from simple façade scaffolds to complex outdoor scaffold structures that can be up to 80 metres high."

The scaffolding experts first set up their extensive store of materials in December and then began carrying out small tasks as they got to know their new surroundings. They didn't have to wait long for their first real test, however, as the production plant had to be shut down for maintenance work in February. XERVON's operatives successfully completed all of the tasks assigned to them – with the help of their colleagues from their sister company, XERVON Polska.



### WHAT EXACTLY IS CEMENT?

Cement is a hydraulic binder primarily made from the raw materials limestone/chalk and clay or the naturally found mixture, lime marl. It is then mixed with gravel, sand and water to make concrete or mortar.





Scaffolding has to be erected all around the plant, some of it up to 80 metres high

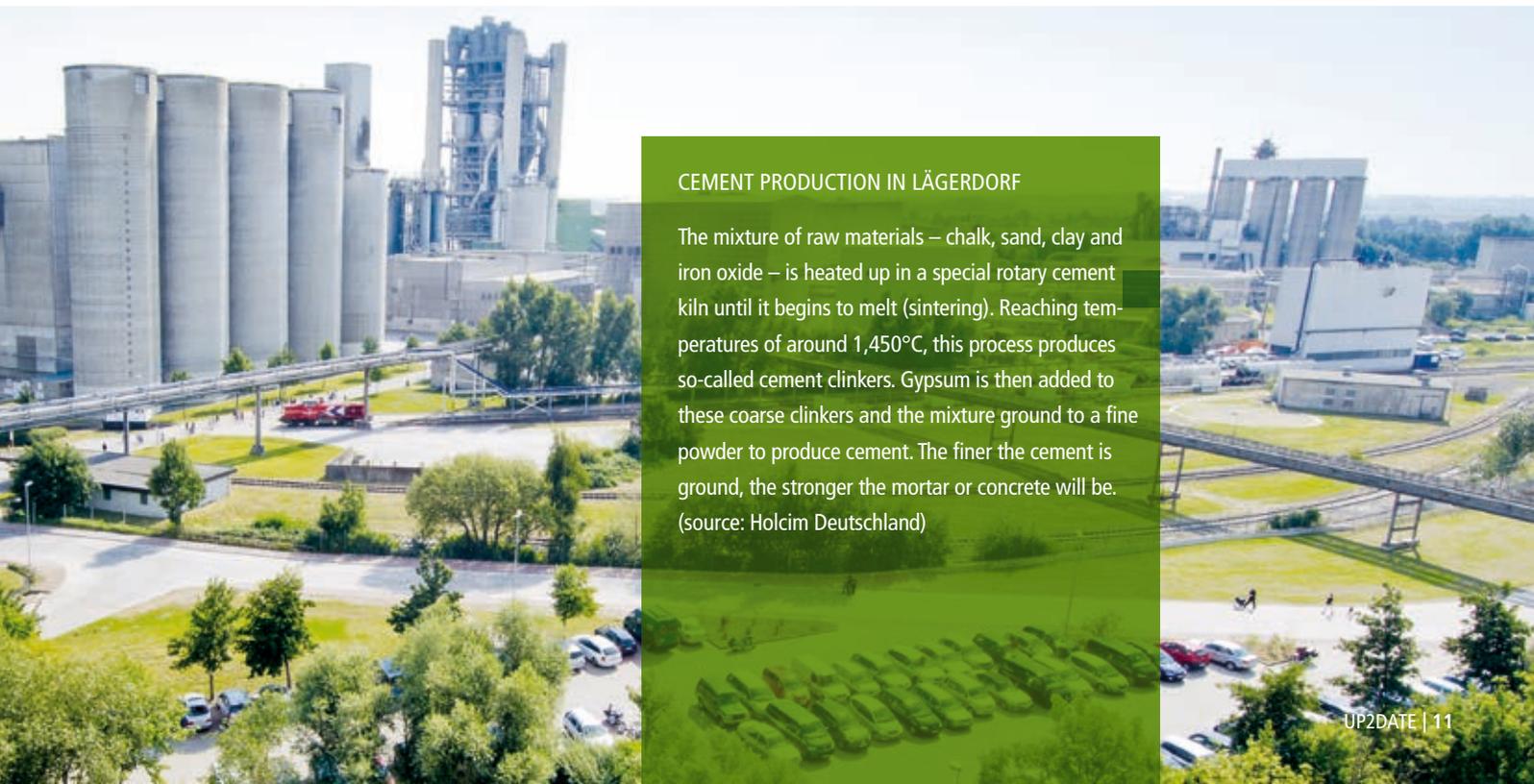
During the turnaround, for example, scaffolding had to be erected on the outside and inside of all the down pipes at the site (used for transferring products) which are up to 80 metres high. The scaffolding specialists had to install special protective roofs on the scaffolding inside the pipes at ten-metre intervals to protect the operatives from falling debris. "That was an exceptional feature and a first for our company," explained Heiko Kranig.

Indeed, the majority of the scaffolds needed by the cement works are not standard designs but are special structures, for which proof often has to be provided to show they are structurally safe. "What's more, the conditions are often not ideal for erecting scaffolding," Heiko Kranig continued. "This is an extremely windy region which makes it particularly difficult to transport materials and set up scaffolds 80 metres above the ground."

XERVON's scaffolding team has, however, obviously been doing a very good job. Just one month into the contract in Lägerdorf, Holcim contacted XERVON to enquire about its corrosion protection and insulation services for the same site. "We have shown our client just how good we are by letting our work do the talking – providing them with reliable and effective services," explained Michael Stiebitz. "Moreover, we have helped our client to cut their costs – by offering them detailed advice at the beginning of a project and then supporting them all the way through to completion."

**"We have shown our client just how good we are by letting our work do the talking – providing them with reliable and effective services."**

Michael Stiebitz, XERVON Branch Manager



#### CEMENT PRODUCTION IN LÄGERDORF

The mixture of raw materials – chalk, sand, clay and iron oxide – is heated up in a special rotary cement kiln until it begins to melt (sintering). Reaching temperatures of around 1,450°C, this process produces so-called cement clinkers. Gypsum is then added to these coarse clinkers and the mixture ground to a fine powder to produce cement. The finer the cement is ground, the stronger the mortar or concrete will be. (source: Holcim Deutschland)

# Professional protection for a pipe bridge

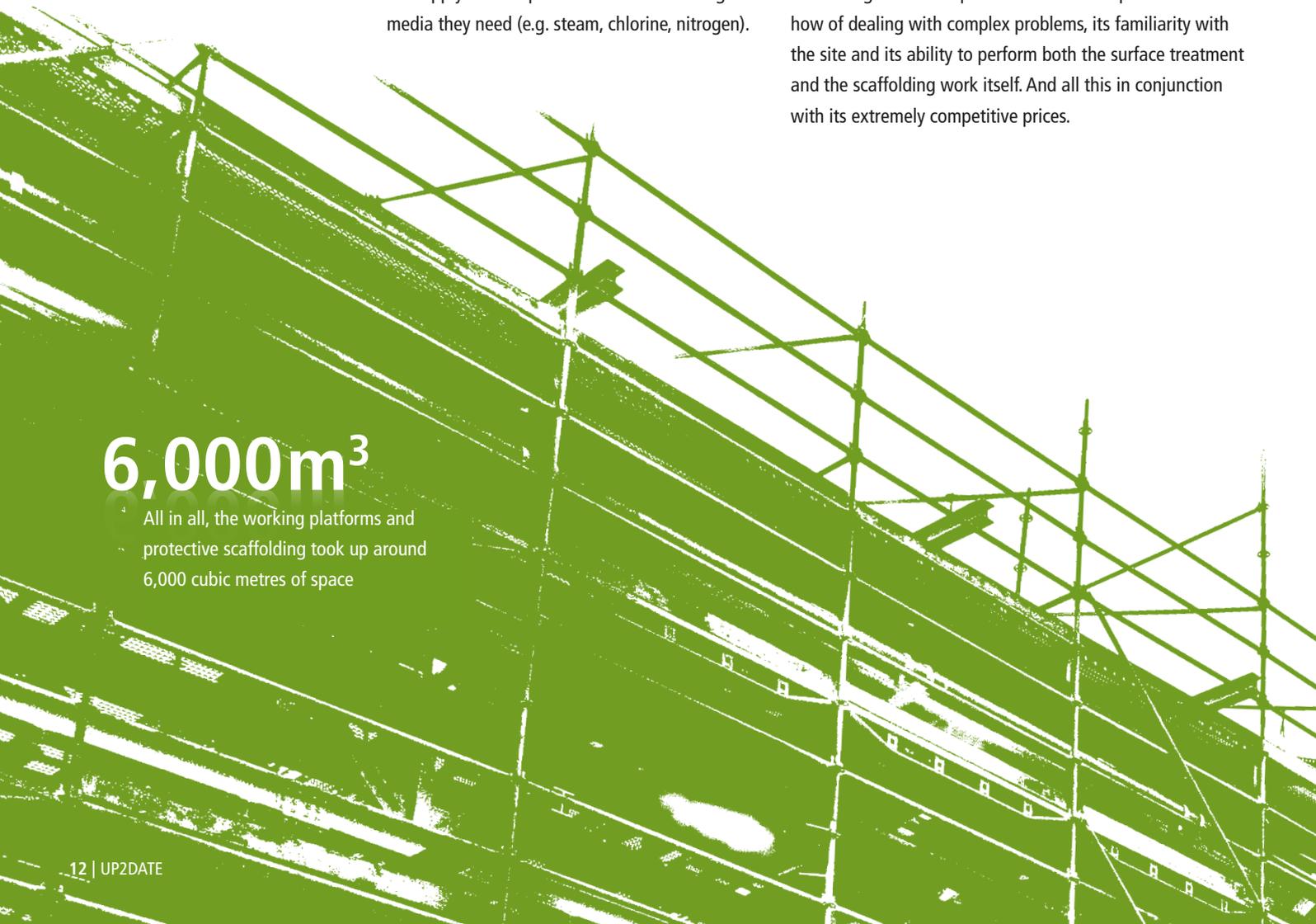
## SCAFFOLDING AND CORROSION PROTECTION FROM ONE AND THE SAME COMPANY

Many clients opt to use this combined offer from XERVON as, more often than not, both services are needed when parts have to be protected against corrosion. With just one contact person for both areas of work, this is an extremely cost-effective solution for the company's clients.

XERVON's corrosion experts know their way around the Frankfurt-Höchst industrial estate very well indeed, a site covering approx. four square kilometres. Both the site operator and the companies located at the chemical and pharmaceuticals park regularly hire this local service provider to carry out their complex coating work. One of their latest projects has been to recoat the surface of an 80-metre pipe bridge. This is just one section of the pipe and cable network that covers several kilometres stretching around the site to supply the companies with the wide range of media they need (e.g. steam, chlorine, nitrogen).

The steel bridge structure is also used for supporting various stainless steel pipes and cables. Situated close to an open salt bunker, it is permanently exposed to a very aggressive atmosphere which means the coating protecting it against corrosion needs to be renewed at regular intervals. The previous coating lasted for an impressive 13 years but in 2015 it was time for a new coat.

XERVON was awarded the contract – beating its competitors during the tender process thanks to its proven know-how of dealing with complex problems, its familiarity with the site and its ability to perform both the surface treatment and the scaffolding work itself. And all this in conjunction with its extremely competitive prices.



6,000m<sup>3</sup>

All in all, the working platforms and protective scaffolding took up around 6,000 cubic metres of space



The 1,900m<sup>2</sup> steel structure, 800m<sup>2</sup> of piping, ca. 300 pipe supports and 750 pipe U bolts were coated in three separate phases

Within just three months, an enclosed scaffolding structure was erected around the pipe bridge (five metres wide and up to twelve metres high) and the surface cleaned and then recoated with a special 300 µm coating system to protect all the parts against corrosion. All in all, the working platforms and protective scaffolding took up around 6,000 cubic metres of space and was erected by the operatives very quickly – after they had first fulfilled all notification regulations at the industrial estate, of course, and received the special permit needed for working on this pipe network. Once the scaffolding was in place, the corrosion experts surrounded it with a 5,000m<sup>2</sup> cover to seal off the area and protect the outside environment from their blasting work. In addition, the stainless steel pipes and cable routes along the pipe bridge were also covered to ensure they were not damaged by the mechanical processes used to pre-treat the steel surface. With the help of compressed air, the corrosion specialists blasted the steel of the pipe bridge with a special blasting material until the old coat and rust had been completely removed. The used blasting material – approx. 30 tonnes – was collected, placed in containers and then sent for professional disposal.

The experts talk about blasting to SA 2.5 standards – a very thorough job, at the end of which all visible oil, fat or dirt must have been removed from the surface (viewed with the naked eye). Moreover, the surface must be freed of any rust, coatings and any other types of contaminants that, at best, appear as pale, patchy or streaky discolouring. At least, that is

the theory – an experienced operative knows simply by looking at the surface when the right results have been achieved. This decision is vital for the next phase – when the surface is primed – as the new coat can only provide long-lasting protection if the surface has been prepared correctly.

The system used to protect the pipe bridge against corrosion comprised four individual coats of specially selected materials: a primer made up of two components, two intermediate coats and a final coat made of polyurethane. The corrosion experts treated the 1,900m<sup>2</sup> steel structure, 800m<sup>2</sup> of piping, around 300 pipe supports and 750 pipe U bolts in three separate phases – a huge challenge that required great care and precision from the operatives to ensure the steel surfaces were given the best possible protection.

The XERVON specialists kept to the strict work schedule they had drawn up beforehand. The result: all work was completed professionally and on time within the tight time frame given by the client.

**€30m**  
investment sum

**8,500m<sup>2</sup>**  
scaffolding covered  
with netting

The 62m tall building  
in the "Im Mainfeld"  
housing estate in  
Frankfurt

**A GREAT**

**FEAT**

**62m**  
height of the  
building

**“We had to use special types of scaffolding anchors here. They had to go through the façade panels so that they could be bolted to the concrete.”**

Sven Januschke, XERVON Project Manager

**This truly was an impressive performance: XERVON’s scaffolding experts needed just four weeks to erect scaffolding around this block of flats so that the builders have a safe platform from which they can renovate the building.**

Almost 30 million euros are being invested in this project to renovate and modernise the high-rise blocks of flats in the “Im Mainfeld” housing estate in Frankfurt. With the majority of the residents and the Mayor of Frankfurt opposed to these seven high-rise tower blocks (built in the 70s) being pulled down, the mammoth task of renovating them began in earnest at the end of November 2013 – primarily to refurbish and insulate the outer walls, roofs and windows.

At the moment, No. 17 – a block of flats 62 metres high – is completely covered by scaffolding which in turn has been enveloped in netting. Plans are for this scaffolding to remain there for a whole year so that all work that is due to be carried out can be completed, in particular to replace the current windows with triple glazing. XERVON’s scaffolding division set about erecting the 8,500m<sup>2</sup> scaffold towards the end of last summer. The structure, which contains two lifts (max. load: 500kg and 1,500kg respectively) and diverse bridging scaffolds with heavy-duty beams, was finished punctually within the time frame given. Such challenging scaffolding projects, however, can only be completed successfully if meticulous planning work is carried out beforehand.

Both the height of the building and the fact that it had to be completely surrounded meant that the structure would have to bear and transfer relatively heavy loads. Furthermore, the scaffolding had to be designed so that it could be used for storing large quantities of materials and parts. In such cases, the experts talk of a load class 4 with the working scaffold having a minimum width of 90 centimetres and a maximum width of 120 centimetres. The large number of ledges on the façade did not make the work any easier for the scaffolding experts either. By far the most difficult challenge to overcome, however, was actually attaching the structure to the building itself.

Normally, façade scaffolding is temporarily bolted at regular intervals to the façade of a building with the help of special scaffold anchors and wall plugs. This ensures that the structure is stable and can transfer a large part of the load it has to bear to the building. It was not possible, however, to use this type of anchoring method here as the façade of the tower block consists of concrete slabs attached to the concrete wall behind them. Such panels are unsuitable as a surface for the anchors. This meant that unusually long anchors had to be used for this scaffolding as they had to go through the panels and be attached to the building’s main concrete wall.

“This was nothing unusual for us but even so there were a number of structural engineering aspects that had to be taken into account in our calculations here,” explained Sven Januschke, XERVON project manager. “We had to use special types of scaffolding anchors here. They had to go through the façade panels so that they could be bolted to the concrete,” he continued. The XERVON specialists had travelled to the site beforehand to carry out so-called pull-out tests on the wall plugs to provide the necessary evidence that the anchors were able to carry the load. As the name suggests, these tests document what forces the wall plugs can bear – ultimately delivering proof that the scaffolding has been safely attached to the building.

“It’s not difficult to imagine just how much time it took to install such anchors. Quite apart from the large quantity of material needed to erect an 8,500m<sup>2</sup> scaffold and having to put it together and lift it up so high above the ground. “Once again, our team did an excellent job,” Sven Januschke said, praising his operatives. “We have worked for this client many times before and have always completed our work on schedule.” And this hard work has paid off. Since then, the XERVON scaffolding specialists have successfully erected a scaffold around a further high-rise block of flats in the “Im Mainfeld” housing estate.

XERVON is one of the leading scaffolding companies in Europe and is well known for its ability to deliver fast and reliable services for large-scale projects thanks to its extensive personnel and material resources

# Four in one go

XERVON INSTANDHALTUNG MASTERS SEVERAL MAJOR PROJECTS  
ALL AT THE SAME TIME

Maintaining and operating production and infrastructure facilities in the process industry – these are the main areas of expertise of XERVON Instandhaltung GmbH. The company recently demonstrated just how extraordinary its capabilities are in this field when it took part in three refinery turnarounds and a project to convert a refinery. These complex large-scale projects all took place at the same time and all had extremely tight schedules.



Inspecting and overhauling refineries are a challenging time for all those involved. A whole range of complex interconnected tasks have to be performed under the strictest of safety standards and within the shortest of times – and delivered reliably, smoothly and according to schedule. All the work must be meticulously planned beforehand and then implemented perfectly if such projects are to be a success.

**“Good planning is extremely important; what is key, however, is the team of qualified people on site.”**

Thomas Kramel, Managing Director at  
XERVON Instandhaltung GmbH

Comprehensive expertise is needed to be able to carry out several turnaround projects simultaneously. To begin with, XERVON Instandhaltung has an extremely experienced and highly effective planning department which plans each and every individual task right down to the smallest detail. All the different resources are organised – from the number of operatives that will be needed, to the materials, to the technical equipment and tools.

One of the aces that the XERVON maintenance specialists have up their sleeve is their extensive capacities. Firstly they have a very large stock of tools and secondly they have a large pool of excellently trained specialists. Moreover, their own team of operatives can be joined by employees from their partner companies whenever they are needed. Thanks to these resources, the company was able to deploy over 1,000 operatives for the four projects which lasted a total of two months.

“Manpower and equipment are both extremely important in our business. Flexibility, however, is also key,” explained managing director, Thomas Kramel. No matter how well such projects are planned and no matter how many years of experience a company may have, it is impossible to organise everything beforehand. There are always a number of tasks that crop up unexpectedly during such turnarounds that have to be sorted out within a short space of time. Thomas Kramel continued: “Our ability to react quickly to such circumstances is one of our strengths and one of the reasons why XERVON Instandhaltung has such a good reputation in this specialist field.”

# 1<sup>st</sup>

PROJECT

## **A shutdown at a large refinery in the north of Germany**

XERVON Instandhaltung was responsible for all piping and all mechanical work during a turn-around project at a refinery in Hamburg, which lasted several weeks. Several hundred machine parts had to be dismantled, checked, repaired where necessary and then reassembled, including heat exchangers, vessels and control and safety valves.

# 2<sup>nd</sup>

PROJECT

## **Conversion of a conventional refinery into a refinery for specialty oils**

At the same time, the conventional refinery at the site was converted into a refinery for specialty oils. XERVON's maintenance experts played a major role in this project as well. Several hundred of the company's piping experts travelled to the site to construct pipes, perform welding work and install fixtures. They laid the pipes for the new plant sections and serviced the pipes in the old plant facilities.

# 3<sup>rd</sup>

PROJECT

## **Münchsmünster industrial estate, large-scale turnaround at a refinery**

A cracker and polyethylene plant – the centrepieces of the production operations – had to be inspected at a refinery located in Münchsmünster industrial estate. XERVON Instandhaltung works at this industrial estate as a general contractor. Its on-site team there was joined by a variety of other specialists for this project – including XERVON scaffolding experts, BUCHEN industrial cleaning specialists and BUCHEN-ICS, a company specialising in catalyst handling.

# 4<sup>th</sup>

PROJECT

## **Heide Refinery – turnaround project**

Heide Refinery is the northernmost plant processing crude oil in Germany. XERVON Instandhaltung has a contract with the operators there to provide services whenever a turn-around is due and so are always on site during shutdowns. Besides carrying out the other three projects, therefore, the company also performed a wide range of tasks here as well – checking the heat exchangers, containers, air coolers, reactors and columns.

XERVON Instandhaltung provides a full range of services from infrastructure services, to services for rotating equipment and fittings, all the way through to shutdown and maintenance management



# Henkel and XERVON demonstrate the Loctite® Composite Repair System

HENKEL USES LOCTITE® AT ITS MAIN PLANT IN DÜSSELDORF TO SHOWCASE ITS PRODUCT

Henkel Adhesive Technologies, the world's leading solution provider for adhesives, sealants and functional coatings, and XERVON Instandhaltung, the German industrial services specialist, recently performed pipe repair work at Henkel's main plant in Düsseldorf using the new Loctite® Composite Repair System.

This innovative system extends pipe lifetime by up to 20 years. A further advantage is that the pipes can be repaired whilst the plant is online, thus avoiding the often considerable expense of an unplanned shutdown.

18 kilometres of pipe bridges and 300 kilometres of pipes can be found at Henkel's plant in Düsseldorf. One of the operator's top priorities here is to have a fast, safe and long-lasting system in place for servicing the site's steel pipelines and repairing any leaks. The Loctite® Composite Repair System is able to restore even highly corroded pipes so they are as good as new – extending their lifetime by up to 20 years.

## 20 is the magic number

"20 years are a must – and that is also true for our competitors' products. We are sure though that the Loctite® Composite Repair System will last much longer," commented Carsten Sperlich, head of the technical infrastructure at the site in Düsseldorf and so responsible for the state of the pipe bridges. "This system is really interesting. As the corroded pipes can be repaired whilst the plant is still running, we don't need to pay the additional costs incurred by an unscheduled shutdown."

## Repairing rather than replacing pipes

Ten metres of pipe were repaired with the Loctite® Composite Repair System for this pilot project. The standard procedure here would have been to remove and replace this section of pipe as soon as the pipe wall became too thin or leaks appeared. "Thanks to Henkel's innovative system, the pipe is as good as new," explained Bernd Hammer, global market development manager oil & gas, refineries. If the pipe had had to be replaced, then the operator would have had to shut down the plant, remove the damaged section, replace it with a new section and then restart operations. "This is one of our main arguments as this new system is a far more cost-effective alternative."

## And this is how it works

The first step is to clean the damaged pipe: the surface is treated using sand-blasting equipment until the SA 2.5 surface preparation standard is achieved. At the same time, the blasting work roughens the surface of the steel to a depth of 75 micrometres so that the structure of the surface acts as a mechanical anchor in addition to the adhesive binding with the coating material. Loctite® SF 7515 is then applied to the surface as soon as this has been completed. This coat is a temporary corrosion inhibitor preventing flash rust occurring following the surface preparation work. The centrepiece of the repair system, however, is the next stage when the operatives cover the pipe with several layers of the high-strength glass-carbon fibre tape, Loctite® PC 5085, which has been pre-treated with the two-component epoxy resin, Loctite® PC 7210. The final task is to apply several coats of Loctite® PC 7255 to protect the pipe against corrosion.

## HENKEL

Henkel operates worldwide with leading brands and technologies in three business areas: Laundry & Home Care, Beauty Care and Adhesive Technologies. Founded in 1876, Henkel holds globally leading market positions in both the consumer and industrial sectors with well-known brands such as Persil, Schwarzkopf and Loctite®. Henkel employs around 50,000 people and had sales of 16.4 billion euros and an adjusted operating profit of 2.6 billion euros in 2014.



The final step of the Loctite® Composite Repair System is to apply several coats of Loctite® PC 7255 to protect the pipe against corrosion

A total of 18 kilometres of pipe bridges and 300 kilometres of pipes can be found at Henkel's plant in Düsseldorf

A detailed check is carried out to examine the quality of the repair work

### An accredited system

The Loctite® Composite Repair System has been awarded accreditation by DNV GL in line with the global quality standard ISO 24817. This quality standard defines the criteria for composite repair systems used in the petrochemical, oil and gas industries. Moreover, the procedure has been approved by Lloyd's Register in line with the ASME PCC-2 standard as well as by the international certification body, TÜV Rheinland. "The accreditation process is extremely complex. We are the only company on the market to have received full accreditation from three separate certification bodies. This automatically boosts the customers' confidence in the product," Bernd Hammer continued.

### Tapping into new markets together

It was XERVON that applied the Loctite® Composite Repair System to the pipes at Henkel's plant. This international company has a wide-ranging portfolio of industrial services and in-depth knowledge of installing and servicing pipes and fittings in the process industry. The XERVON employees had taken part in a comprehensive training course at Henkel's own Centre of Excellence in Garching near Munich to prepare for the project.

XERVON is one of a select number of service providers to collaborate with Henkel, which has set up a specialist network of "Henkel-certified applicators". Businesses that wish to have this status – such as XERVON has – must first undergo a comprehensive qualification process. Together, Henkel and its partners offer a range of surface technology and coating services. "The Loctite® Composite Repair System really is excellent. This joint project in Düsseldorf should make industrial customers more aware of this innovation," commented Thomas-Peter Wilk, managing director at XERVON Instandhaltung GmbH.

### Huge potential

The Loctite® Composite Repair System is being used all around the world at refineries, petrochemical plants, power stations and water treatment facilities. The majority of the customers are from the oil and gas sectors where the system can be applied in all areas (up, mid and downstream). There is much interest in this repair system as there are a large number of production plants around the globe that have been operating for many years and need to be overhauled. "Which is why it was so important to use the system at Henkel's own plant. We can now showcase the product to our customers and observe the system long term so that everyone can see for themselves just how good it really is," concluded Bernd Hammer from Henkel.

Loctite® is a registered trademark of the Henkel Group and is protected in Germany and a number of other countries

On 24 May, XERVON gave a live demonstration at its branch in Cologne-Merkenich so that their customers could see close up just how good the system is. Around 50 people attended the event and they were all able to observe each individual step of the process and see the final results. There was a very positive response from the visitors and a number of customers, operating large networks of production facilities, have asked XERVON to carry out further demonstrations so that their site managers can also get to know the system. If you are interested in learning more about the Loctite® Composite Repair System, please contact our branch manager in Cologne-Merkenich, Jens Besselmann (jens.besselmann@xervon.com). We are very happy to answer your questions and, should you wish, to show you how the system works.



# Close to the sky

## XERVON ERECTS SCAFFOLDING AROUND THE CHURCH ON MOUNT WENDELSTEIN

XERVON's scaffolding experts had to be particularly light on their feet as they set about erecting scaffolding around Germany's highest church: they had to transport seven tonnes of material uphill for the last few metres of the journey by hand.

A somewhat different kind of scaffolding project – 1,740 metres up a mountain

No, Germany's highest church is not on the Zugspitze (2,962m), as many people might think, but on Mount Wendelstein (1,838m) in the east of the Bavarian Alpine Foreland. Looking at the rules of canon law that distinguish between a chapel and a church, the church on Mount Wendelstein (1,740m) has the edge over the chapel on the Zugspitze. Built 125 years ago, Wendelstein Church regularly holds Sunday services for worshippers and is also a popular location for weddings. Over the years, it has had to withstand strong winds and numerous snowstorms as it is so exposed to the elements. Damp has caused so much damage that there has been no choice but to repair the building. Not only the walls and elaborately designed furnishings have been affected but also the roof.

XERVON was awarded the contract to carry out the complex scaffolding work around the outside of the church. Especially, "as we were able to present the client with a detailed and logical plan about how we intended to transport and erect the materials and explain how we would be able to perform each individual step within the specified time limit," explained Patrick Hänsel, scaffolding branch manager for the company's south region division. He described the challenges that he and his team had to face for this particular project: in April, they were given just five days to transport around seven tonnes of scaffolding material up the mountain and erect it around the building.



“Our concept to transport and erect the materials was implemented perfectly. Despite the difficult weather conditions, everything went according to schedule so that the scaffolding was available on time for the team to carry out their renovation work.”

Patrick Hänsel, scaffolding branch manager for the company's south region division

Simply getting the scaffolding material up the mountain to the church was an unusual and time-consuming task in itself. All the material was first transported by train on the Wendelstein cog railway – normally used by tourists, hikers and churchgoers – to the train station 1,723 metres up the mountain. A special transport waggon was used for this. The scaffolding material was then unloaded onto the mountain by hand and, from this point onwards, there was no automated equipment available to help the crew: the scaffolding specialists had to walk the last few metres to the church carrying their material themselves.

Everything had to go really quickly after that because of the weather conditions: a scaffold was erected around three of the church's walls for the first stage of the building work. The south-facing fourth wall is extremely difficult to access and so a suspended scaffold will be set up there at a later date to provide the builders with a safe platform to do their work. XERVON's scaffolding experts will use the material that is already there to erect this hanging scaffold for the second part of the project – by rebuilding and repositioning their first scaffold structure. A technical challenge that is standard work for XERVON's scaffolding division. The meticulous and detailed planning work that has to be carried out beforehand for such unusual scaffolding projects is also a routine task for the XERVON professionals.



The renovation work on the church is currently well under way. Every day – weather permitting – the builders are busy repairing the roof and walls. According to the plans, the scaffolding will be needed for around 34 weeks. Whether the renovation work will be completed in this time or not depends entirely on the weather. Hopes are that the church will be able to celebrate High Mass with a special service and concert on 28 August 2016.

The team had to carry all the material themselves for the last few metres of the journey

The south-facing fourth wall is extremely difficult to access and so a suspended scaffold will be set up there at a later date

1,838m

Germany's highest church is not on the Zugspitze (2,962m), as many people might think, but on Mount Wendelstein (1,838m) in the east of the Bavarian Alpine Foreland

# A smart industrial cleaning solution

AN INGENIOUS IDEA: A NEW HIGH PRESSURE WATER JET TOOL ELIMINATES MANUAL WORK

BUCHEN's technology division has been collaborating with BUCHEN Tank- and TurnaroundService to develop and build an innovative tool for performing industrial cleaning tasks using a high pressure water jet: the so-called HDR 360 is a remote-controlled tool attachment with 360 degree movement that ensures greater safety and productivity at the washing areas set up at industrial facilities and refineries for cleaning small parts.

BUCHEN is also prepared to develop its own novel technology to find smart solutions for its customers

People not working in this sector may be misled by the term "small parts"; industrial cleaning specialists do not necessarily mean physically small parts but individual components of heat exchangers that need to be dismantled during maintenance work and cleaned separately. These include, for example, hoods, sliders, outer chambers, rings, fittings and other parts, whose size or diameter can be anywhere between ten centimetres and two metres. Up to now, such parts have had to be cleaned manually using high pressure water jets – tiring work that is not without its dangers and which the operatives may only perform wearing full body protective suits. "Our goal was to automate this work in order to make it safer," explained area manager, Uwe Haag, from BUCHEN Tank- and TurnaroundService, who had the idea to develop this tool. Working together with the company's own technology department, this idea was turned into the innovative HDR 360 cleaning tool.

unlike all the other types of cleaning equipment on the market which all have some kind of hose connection on the outside that always restricts movement.

Uwe Haag explained: "The prototype of this innovative HDR 360 was developed so it could be attached to our OBC XL outside bundle cleaner, an automated cubicle system used in washing areas to clean heat exchanger bundles. The HDR 360 is attached to the cleaner instead of the normal cleaning head and then uses its hydraulic control system and water supply." As the arm on the outside bundle cleaner is also extremely flexible, even parts with a highly complex geometry can now be cleaned automatically. Places that are difficult to access, such as grooves, covers and hidden pipe outlets, and that were very difficult to clean by hand can now be cleaned quickly with the remote controlled HDR 360 and is completely safe for the person operating the device.

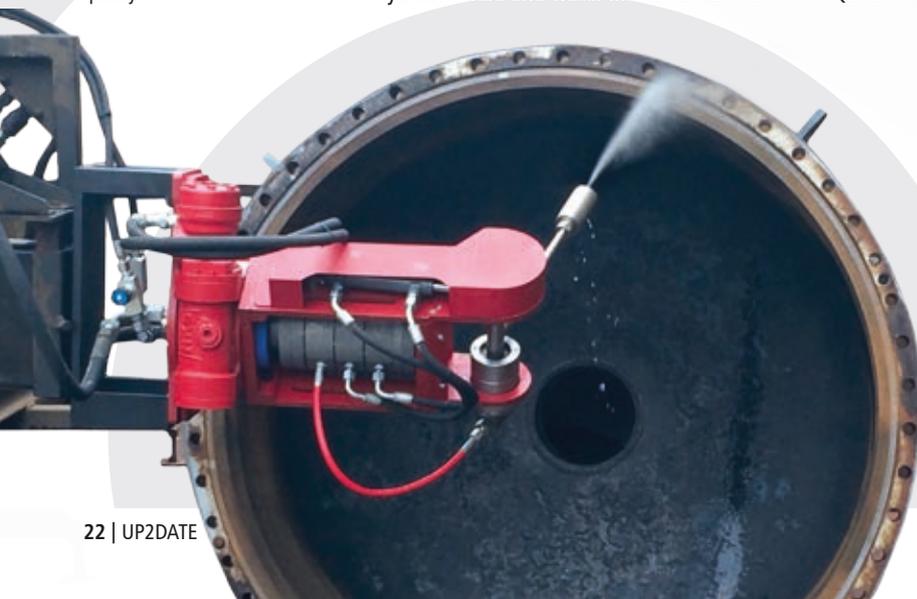
Thanks to the HDR 360, a completely new tool attachment, high pressure cleaning work can be carried out without any risks to the operatives; the work produces high quality results that are, for the most part, just as good and that are often completed far more quickly

## Unrestricted movement

"360" stands for 360 degree movement – without any type of obstacle, such as hoses or connections, that might get twisted or break off. This is absolutely unique and was only possible by installing all control and supply hoses for the hydraulic fluid and water in the inside of the tool. Quite

## And the ideas keep coming

The HDR 360, which has the CE marking, has been designed to withstand a level of pressure and flow rate that hand-held equipment cannot achieve because of the powerful recoil they cause. Depending on what they are needed for, both smaller versions of the attachment can be used and they can be placed on other devices (e.g. mini-excavators) – the principle of the design is always the same. All that is needed are a high pressure pump and a hydraulic control system – which means there is a great potential for this new tool in a whole range of other areas. There are still plenty of possibilities ...





# Ultrasound for perfect cleanliness

NEW CLEANING TECHNOLOGY (NOT ONLY) FOR SCAFFOLDING MATERIAL

**BUCHEN** has been providing a refinery in Schwedt with a novel service that speeds up the process of cleaning oily scaffolding and considerably reduces the amount of manual work that needs to be done: a special ultrasound cleaning device removes stubborn pieces of dirt from the scaffolding parts within no time at all – a task that needs to be performed at a refinery every single day.

Scaffolding used at refineries generally ends up smeared with tar, bitumen, oil and fats, which, for the most part, can only be removed with chemicals and high pressure water jets – a very time-consuming and labour-intensive job. What's more, this manual work can damage the scaffold's zinc coating which is there to protect the parts against corrosion. A solution to this problem is the innovative ultrasonic cleaning bath such as that used by BUCHEN UmweltService in Schwedt.

"We worked with our technology department and took a detailed look at the different ways the ultrasound technology might be used. Having carried out a series of extensive tests, we decided to invest in a new system," reported Wolf-Eckardt Wüstenhagen, BUCHEN area manager responsible for the east region (Germany). The results they are achieving are truly amazing: no matter how dirty the scaffolding parts are, they are completely clean and ready to be re-used when they are removed from the ultrasonic cleaning bath. Between two and a maximum four hours are needed for this cleaning process. This is not only much faster, more effective and less abrasive than manual cleaning methods, it has also improved the working conditions of the industrial cleaners, who previously had to clean the parts manually with high

pressure water jets whilst taking very strict safety precautions. The parts are now cleaned in a 5,200 litre tank, into which a cleaning basket (3.1m x 1m x 1m) is lowered with the simple press of a button. The system can, therefore, hold a complete stacking rack of scaffolding material.

XERVON's scaffolding division also has an office at the refinery in Schwedt and is one of BUCHEN's regular customers. It, too, has been making the most of this innovative cleaning service. "We very rarely clean scaffolding material by hand now – only in exceptional cases," commented XERVON branch manager, André Schmidt. "The ultrasound method cleans the scaffolding material in no time at all. Further cleaning work is not necessary and all the parts are completely clean."

Wolf-Eckardt Wüstenhagen believes that this ultrasound technology could potentially be used in many other areas: besides scaffolding material, fittings, for example, or small fixtures from containers and columns and other similar parts could also be quickly and effectively cleaned in the ultrasonic cleaning bath. Moreover, other customers can benefit from this mobile system as well as it can be sent to sites across the whole of Europe where it can be put to use in no time at all.



The ultrasonic cleaning bath can hold a complete stacking rack of scaffolding material

BUCHEN's sister company, XERVON, has been really impressed by the cleaning results and has been making the very most of this innovative on-site cleaning service

# Logistics concepts for a large refinery

BUCHEN SUPPORTS THE OIL COMPANY BP AT ITS SITE IN GELSENKIRCHEN



Last summer, BUCHEN began providing an extensive range of logistics services for one of the largest refineries in Germany. The company is in charge of waste management logistics, transporting materials between on-site facilities and handling all mail at the plant. REMONDIS West is also helping it to carry out the recycling work.

BP provides services for and sells products to millions of customers across Germany every single day with its BP, Aral and Castrol brands. The company operates refineries and produces fuels, heating oil and lubricants which are sold on to wholesalers and distributors as well as to final consumers via its petrol stations. BP runs its Scholven and Horst plants in Gelsenkirchen (a town situated in the Ruhr area) as an integrated refinery. Each year, it processes around 12 million tonnes of crude oil to manufacture over 50 different products: petrol, diesel, aircraft fuel, heating oil, bitumen and petroleum coke as well as a wide range of petrochemical products, primarily for the plastics industry.

## Just like a small town

The various production plants at the two sites in Gelsenkirchen are spread over around 360 hectares – approximately twice the size of the state of Monaco – and belong to Ruhr Oel GmbH, in which BP owns a 50 percent share. Indeed the site functions just like a small town as it covers such an extensive area. This is particularly true when it comes to dealing with the complex material streams: it is essential that a sophisticated logistics network is in place if everything is to run smoothly there. This is where BUCHEN comes into play, providing its logistics services and helping to take the pressure off the site's operator by performing organisational tasks that only indirectly affect the production processes.



Around  
**12,000,000**  
tonnes of crude oil  
are processed here every year to  
manufacture over 50 different types  
of product

A wide range of refinery and petrochemical facilities: the Gelsenkirchen site has a complex system in place to process crude oil



#### Material flow management in cooperation with others

One of the company's three largest areas of work is waste management logistics which is handled by both BUCHEN and the regional company REMONDIS West. Both collaboration partners specialise in collecting and transporting all types of waste and the tasks have been clearly divided up between the two companies. REMONDIS West is responsible for all commercial waste including paper and cardboard. The various material fractions are first thrown away into a range of different containers, picked up according to a fixed schedule and then transported away for processing and recycling.

All other types of waste are collected by BUCHEN and taken to the relevant plant or facility. The company has hundreds of containers and a selection of specialist vehicles to enable it to do its work at the refinery in Gelsenkirchen. BUCHEN UmweltService GmbH's Ruhr Region division is in charge of the actual operations.

#### Systematic material logistics

BUCHEN also carries out all material logistics inside the plant. The tasks here are extensive, with components and machinery having to be moved between the on-site facilities, drums containing samples taken from A to B and technical equipment transferred from one place to another every single day. All these activities are organised and performed by BUCHEN's logistics team – a complex task that calls for high levels of flexibility and absolute reliability.

#### A smooth transition

Before starting this major contract, BUCHEN invested a considerable sum of money to ensure it could carry out the comprehensive logistics tasks in the best possible way. The preparation work, concept and implementation went perfectly: BUCHEN's services have become an integral part of the site after only a very short transitional period – to the great satisfaction of its client.

## 360 hectares

The production plants at the sites in Gelsenkirchen are spread over ca. 360 hectares – an area almost twice the size of Monaco



# Defying the weather!

## FLEXIBLE, TEMPORARY ROOF COVERS ENSURE BUILDING SITES REMAIN FULLY OPERATIONAL

With the winters having been comparatively short and mild in Germany over the last few years, the question of protecting building sites against adverse weather conditions is one that is perhaps not foremost in most people's minds. Not so, however, in the Nordic countries where construction teams have to endure extreme weather conditions for months on end. As is the case in Sweden: here, XERVON Sweden has become one of the leading specialists for smart scaffolding solutions, particularly when it comes to providing complex weather protection systems. Two such examples: a major school renovation project in Visby and the rebuilding work carried out recently on the concert hall in Örebro.

XERVON Sweden –  
specialists for smart  
weatherproof systems

### Self-supporting weatherproof roof cover for school renovation project

XERVON Sweden's scaffolding experts can currently be found on the Island of Gotland in the Baltic Sea where they are working together with HAKI, a manufacturer of weather protection systems, on one of the largest weather protection projects that Sweden has ever seen. They began erecting a weatherproof structure – almost 4,000 square metres in size – in the summer of 2015 which now covers the building site at the secondary school in Visby. Protected by this roof, the construction teams were able to pull down a section of the school complex – leaving just the foundations and a part of the façade standing – so that the new building could be erected. This project, which is due to be carried out in two phases, should be completed in 2017.

The weatherproof roof has a surface area of 44.5 metres by 60 metres. It is not simply its size, however, that makes this specialist task so unusual. The roof and the scaffold below it have been erected as a self-supporting structure. Normally such scaffolds are anchored to the building itself but this was not an option here as most of the building was to be demolished. The weatherproof construction has, therefore, been anchored to special concrete bases cast specially for this purpose. These bear the complete load and ensure the gigantic structure is stable.

A further special feature of this temporary roof in Visby is its flexibility: it consists of four separate sections – each approx. ten metres in length – that can be moved individually. This enables the roof to be opened up wherever necessary so that material can be supplied by crane. There is also another reason for designing such a mobile solution: the whole weatherproof system is to be moved over to the southern half of the school complex as part of the second phase of the project, which started at the beginning of 2016, so that the demolition and construction work can continue.

### Well protected

A further interesting example of a weatherproof building site could be found at the concert hall in Örebro. This well-known neo-classical building, dating back to 1932,

Go to YouTube to see an interesting video about XERVON's project in Visby



Visby is located on the west coast of Gotland, a region that is well-known for its adverse weather conditions. Thanks to this weatherproof cover, however, work can continue despite the fierce storms, heavy rainfall and low temperatures. This gigantic weatherproof structure has been built in sections and consists of a scaffold topped by a robust frame with a tarpaulin cover that "floats" up to 20 metres high above the old roof of the school complex and currently spans the northern half of the building.

## XERVON SWEDEN AB

With over 20 years' experience, XERVON Sweden AB is one of the leading scaffolding businesses in Sweden. The company is based in Stockholm-Kungsängen and has branches in Örebro, Karlstad, Göteborg, Malmö and Norrköping.

The company provides a number of services including:

- Scaffolding: façade scaffolding, industrial scaffolding, enclosed weatherproof scaffolding, suspended scaffolding / motorised suspended scaffolding
- Insulation
- Corrosion protection



## 800m<sup>2</sup>

One of the tasks was to design and erect a weatherproof structure to enable the 800m<sup>2</sup> roof to be rebuilt above the main auditorium

reopened its doors to the public in December 2015 having undergone major renovation work. The centrepiece of this building is its new auditorium which is now much larger as the roof has been raised by five metres.

Moreover, the entrance hall and foyer have been extended and a modern kitchen and diverse rehearsal rooms added on – which are also used by the Swedish Chamber Orchestra, which is based there. “Our task was not just to design and erect a weatherproof structure to enable the 800m<sup>2</sup> roof to be rebuilt above the main auditorium. We also took on all the other scaffolding tasks at the building site, providing work platforms and protective scaffolds wherever they were needed,” said Jens Sjöberg, managing director of XERVON Sweden, as he described this large-scale project.

Both those planning and erecting the temporary weatherproof roof had to face a number of challenges: the unusual shape of the building, its location right next to a river and

## 4,000m<sup>2</sup>

A weatherproof structure – almost 4,000 square metres in size – has covered the building site at the secondary school in Visby since the summer of 2015

the very limited space available on the building site itself. With a total width of 35.5 metres and a length of 36 metres, the structure, which consisted of sliding roof sections, not only spanned the affected part of the building along the concert hall’s façade but also at an angle to it. This meant that a particularly complex supporting structure was needed – especially beside the river where there was very little room for the scaffold base. The scaffolding experts, however, were able to find solutions to all these challenges, including using special tripod scaffolding towers. Here, for example, cranes were used to lift individual sections of roof and roof girders above the ground so that they could be attached to the top of these towers.

Once this complex weatherproof structure had been successfully erected, the building work was able to be carried out uninterrupted and without delay so that the renovation work on the new concert hall was completed according to schedule.

# A truly prestigious project

A NEW REFINERY FOR EGYPT: XERVON TO MANAGE UP TO 2,000 OPERATIVES

The Egyptian economy is growing. Across the country, major construction projects – such as the new Suez Canal – are sending strong signals about Egypt's future. One of these showcase projects can be found in Cairo where work is currently in progress to build a new refinery. XERVON is among the group of highly respected international companies at the site – providing its client with a wide range of services including surface technology, fireproofing, insulation and scaffolding.



Egypt is the second most industrialised country in Africa, just behind South Africa.\* It has experienced a number of radical changes since 2011, all of which have been closely followed by the international community. The Middle East, Africa and Europe have been playing an active role in transforming Egypt's economy as have Japan, Korea and numerous other countries – not least because the Egyptian government is

clearly pursuing a policy to attract direct foreign investment. Growth and prosperity – this vision of a strong Egyptian economy is pulling in investors from all around the globe and leading to a number of major projects being set up across the country. One of the largest investment projects currently in progress is the new refinery being built by the Egyptian Refining Company (ERC) in Mostorod, a district of Cairo.

\*Source: Federal Foreign Office

## SOME INTERESTING INFORMATION ABOUT THE MAIN STAKEHOLDERS

The general contractor responsible for ERC's new refinery is the South Korean company, GS Engineering & Construction Corporation (GS E&C). Founded in 1969, it has become one of the world's leading contractors for building industrial facilities and power plants within the oil, gas and petrochemical sector. The company is a so-called EPC contractor (engineering, procurement, construction), handing over turn-key plants to its clients, having designed, built and commissioned the facilities and provided all engineering services. GS is one of XERVON's key customers in the Middle East and North Africa.

The biggest investor and principal owner of the refinery project in Mostorod is ERC Egyptian Refining Company, a subsidiary of the private investment firm, Citadel Capital (3.7 billion US dollars); a number of other investors are also involved in the project, however, including the African Development Bank, the European Investment Bank, the World Bank, the German DEG/KfW Bank, the Japan Bank for International Cooperation, Korea Eximbank as well as the Egyptian government.

This project involves the construction of a completely new refinery which is being built on ERC's grounds on the outskirts of Cairo and will meet the most stringent international environmental standards. This state-of-the-art refinery will be able to handle almost 88,000 barrels per day. Due to be completed in 2017, it will convert heavy fuel oil into high quality products, primarily diesel, and so cut future imports by around 50 percent and help satisfy Egypt's ever growing demand for diesel.



One of the largest investment projects currently in progress: the new refinery being built in Mostorod (Cairo)

XERVON Egypt S.A.E., a fully owned XERVON subsidiary, is also playing a vital role in this major project. The team of operatives are both experienced and confident: "We've already successfully completed a number of other major projects here in Egypt and so are well prepared for this challenge." They will, however, be working within a very tight schedule as the work is due to be completed within just 25 months. To be able to deliver their services on time, the company has decided to deploy cutting-edge equipment and technology that have never been used in Egypt before, such as CNC-controlled machinery to produce prefabricated

sheet metal. The company's tasks include performing 200,000 square metres of piping corrosion protection work, 105,000 square metres of passive fireproofing as well as 260,000 square metres of thermal insulation. Moreover, XERVON is also responsible for planning and erecting all access solutions and scaffolding required to perform this work. "We have estimated that, at peak times, around 2,000 operatives working at the site will be under XERVON's management," commented XERVON's project manager, once again highlighting the scale of this remarkable project.

 **88,000**

This state-of-the-art refinery will be able to handle almost 88,000 barrels per day

### A comprehensive portfolio of top quality services

Founded in 1997, Cairo-based XERVON Egypt S.A.E. has become one of the leading service providers on the Egyptian market. XERVON Egypt is well-known among its clients for its extensive range of services and primarily operates within the chemical and petrochemical industry as well as the energy sector. The company, however, also serves the food industry, the processing industry, the pharmaceutical sector and the construction industry as well as the public sector. Its range of services includes:

- Floor coatings
- Fireproofing
- E&I technology
- Scaffolding
- Surface technology
- Thermal, cold & acoustic insulation systems

# A corroded condenser

BRAZILIAN NUCLEAR POWER PLANT CALLS IN THE GERMAN COATING SPECIALISTS

XERVON Plastocor GmbH specialises in protecting the various components found in the cooling water circuits at power stations against corrosion. The company is also the only firm in Germany to offer its customers the patented coating system, Plastocor®, and to have its own specialists able to apply this tried and tested system in Germany and abroad – including all preparatory blasting work and related tasks. These experienced experts have travelled to over 60 countries to perform their work. A further project has now been added to their list: the Brazilian nuclear power plant, Angra.

The newly sealed tube sheet

The official name of Brazil's only commercial nuclear power plant is "Central Nuclear Almirante Alvaro Alberto". It is, however, more commonly referred to as the "Angra power plant" as it is located in Praia de Itaorna in Angra dos Reis (Province of Rio de Janeiro). Looking back, the plant's history has been quite eventful. Construction work on Angra I and its pressurised water reactor began back in 1971 and it has been supplying the grid with electricity (net output: 626 MW) since 1982. A second pressurised water reactor, Angra II (1,350 MW), was commissioned in 2000. Work then began to build a third pressurised water reactor with a net output of 1,405 MW in 1984 but stopped again in 1986. The project was restarted in June 2010 and is expected to be completed in 2018.

## Inspection revealed a number of leaks

The condenser in Angra I's pressurised water reactor has, therefore, been in use for a while now. Some time ago, it was discovered during a regular inspection that the ends

of the titanium tubes were leaking and that the inlets were being eroded away. Typical damage for a plant this old. One of the main types of damage found on condenser tube sheets and other types of heat exchanger is pitting corrosion caused by the formation of galvanic cells. These cause leaks in the section where the tubes have been expanded. Whilst this was putting neither the population nor the environment at risk – the affected cooling water circuit is completely separate from Angra I's nuclear section – it was having an impact on the plant's overall performance.

XERVON Plastocor GmbH and its partner Plastocor International SA were awarded a contract to renovate the condenser. The plant's operators did not have to look far for references. They had already experienced the quality of the company's work and their products first hand when XERVON Plastocor coated the condenser of the Angra II reactor in 1998. Impressed by the quality of the Plastocor® coating, they wanted it to be used for this renovation work as well.



# 48,000

Titanium inlets and outlets were coated with Plastocor® 400IL Ceramic, each up to 25mm in length



Angra, Brazil's only commercial nuclear power



Plugs are first placed in the tubes before the tube sheet can be recoated

### Leaving nothing to chance

Both the fact that the project was to be carried out so far away and that it involved a nuclear power plant meant the project management team in Gelsenkirchen and the technical planning department had to spend several months meticulously planning the work. "Nothing could be left to chance here. Every single task had to be thought through from start to finish and absolutely all contingencies provided for," commented the manager in charge of the project. "Of course, we needed to have enough equipment and sufficient supplies of materials on hand. What's more we had to pick the team of operatives very carefully. Only the most experienced employees can be deployed for such projects and they need to be able to cope with the physical and mental strains of such an assignment."

XERVON Plastocor sent out a twelve-man team to perform the renovation and coating work on the condenser, as planned, in two separate phases. They carried out all the blasting work and all other related tasks and applied the following coats:

- A coat of Plastocor® 2000 (three to five millimetres thick) was applied to 80 square metres of tube sheets during both halves of the project.
- During both phases, high pressure water jets were used to remove the old coats from four water boxes (total surface area: over 200 square metres). Three coats of Plastocor® 400 were then applied to the surface.
- 48,000 titanium inlets and outlets were coated with Plastocor® 400IL Ceramic, each up to 25mm in length

### As good as new

The whole of the project was completed to schedule and their client was extremely happy with the results. "We were able to successfully renovate the whole of the condenser within a very short period of time and ensure the plant is performing at its best again. The operator can now rest assured that their main power unit will run efficiently for many years. It would have taken much longer and cost much more money, had they chosen instead to replace the tube sheets and install new tubes," the XERVON Plastocor team concluded, pointing out just one of the tangible benefits of this extraordinary coating system.

## PLASTOCOR® – A TWO-COMPONENT EPOXY COATING

It provides long-lasting protection against all types of damage caused by cooling water, process water, oil and compressed air etc. Thanks to its special formula, it is an extremely robust material that is resistant to cooling water, sea water, diverse chemical elements, emulsions containing solid matter and liquids up to temperatures of +80°C. There are a number of different Plastocor® coatings which are suitable for treating different parts and different levels of damage: the thick-film Plastocor® 2000 system (each coat between three and five millimetres), which is applied by hand, was developed especially for protecting new tube sheets as well as for repairing damaged tube sheets. This system must always be used in combination with specially produced plugs that have a conical head that acts as a negative mould for the finished coating. Hundreds of facilities have been using this technology since 1958 where it has proven its worth many times over.

Plastocor® 400 is a material that is easy to spread and can be applied by hand or with spraying equipment. It was developed to protect water boxes in condensers and other heat exchangers against corrosion and erosion.

The tube inlets and outlets are particularly susceptible to damage. The three-coat Plastocor® Inlet and Inlet ceramic are perfect for protecting these parts (up to 400mm in length) against wear and tear or as a low-cost alternative for repairing them if they are damaged. Thanks to the innovative tube lining system, it is now also possible to coat the inner surface of tubes along their entire length.

# Solid as a rock

## WELL PREPARED FOR THE RECORD HIGH WATERS

XERVON Palmers' scaffolding experts have mastered the huge challenge of providing scaffolding and access for the refurbishment of the historic Ovingham Bridge in the North East of England. The scaffold was battered by record high waters, nearly covering the entire scaffold structure – testing the expert design and build of the access solution to the limit. Of course, it passed with flying colours, 100% safely.

“Access jobs like these are our ‘bread and butter’ – providing scaffolding expertise, safely – even in challenging environments like these flood waters – on time and to a strict budget.”

Donald Morrison, CEO at XERVON Palmers



Ovingham Bridge (166m long) was opened in 1883 and spans the River Tyne in the county of Northumberland. Northumberland County Council and the Department for Transport (DfT) decided that the bridge – which carries 4,000 vehicles a day and was beginning to show signs of wear and tear – was in need of extensive refurbishment work. The bridge was closed to traffic for more than six months. During this time, the existing deck construction, cross girders and deck plates were replaced, new kerbs fitted, the bridge metalwork and lattice trusses refurbished and waterproofing works carried out. At the same time, specialist contractors tackled the task of preventing the spread of an invasive plant species on the bank which was damaging the structure of the bridge.

XERVON Palmers provided expert, bespoke scaffolding and access on the bridge, mainly of a tube and fitting and scaffolding board construction. The XERVON Palmers team, which comprised up to ten operatives, provided a special design with high strength, flood water protected scaffold towers around the bridge columns in a buttress structure, for the sections going under water – which was more than initially expected, given the record floods. These buttresses were specially designed to protect the scaffold from the might of the River Tyne during the record-breaking Winter and Spring high waters and extensive local flooding. Despite these extreme conditions, the scaffolding experts completed their work on schedule with the company providing a Palmers-designed aluminium bridging panel beam system – created to minimise the amount of fittings required, thus reducing the amount of time needed to erect and strike the job. This design innovation also kept the contract within the cost constraints of the County Council budget.

Proud of the achievement of his operatives, Ian McFarlane, Director for Business & Project Development at XERVON Palmers, said: "The scaffolding structure we have provided at the iconic Ovingham Bridge has worked perfectly in providing a safe working platform for the bridge repairs and renovations – even standing solid in the middle of the incredibly forceful River Tyne, on record water levels. And the job has been erected in such a way to save the contractor money and time – meaning the bridge can open to traffic as soon as possible, which is what the local community want."

Donald Morrison, CEO of XERVON Palmers, added "Access jobs like these are our 'bread and butter' – providing scaffolding expertise, safely – even in challenging environments like these flood waters – on time and to a strict budget. We are very happy with the solutions we have created for the job for Northumberland County Council and the Department for Transport and we look forward to working with them again on road network projects in the future in the North East."

The bespoke scaffolding structure provided the best possible access and easily withstood the gushing flood waters of the mighty River Tyne

#### BACKGROUND INFORMATION

Ovingham Bridge was opened in 1883 and operated as a toll bridge until 1944 when it was adopted by Northumberland County Council. It has operated with a 3T weight restriction since 1944. Width restrictors were added in the 1970s to enforce this weight limit. It is situated between Ovingham and Prudhoe and carries 4,000 vehicles/day over the River Tyne.

# A far-reaching project

## XERVON TAKES PART IN ONE OF AUSTRIA'S BIGGEST INFRASTRUCTURE PROJECTS

The major works that were carried out just outside Vienna to upgrade the "Knoten Prater" motorway junction presented scaffolding specialists XERVON Austria with three complex tasks: the company had to plan and erect the scaffolding needed to build two bridges over the Danube Canal; a further shoring structure was also needed to build an access ramp road.



Part of this project involved completely demolishing and rebuilding the 'Erdberg Bridge'

This is one of the biggest infrastructure projects ever to have been carried out in Austria: due to last several years, the "Knoten Prater" motorway junction near Vienna is in the process of being upgraded. Linking the A4 motorway ("East Motorway") and the A23 motorway ("South East Tangent") on the outskirts of Vienna, this is one of the most important motorway junctions east of the city. The roads and bridges here, therefore, have to cope with large amounts of traffic.

The building contractor for this project is ASFINAG, an Austrian state-owned company responsible for roads and motorways in the country. ASFINAG commissioned the "Umbau Knoten Prater" syndicate – consisting of the companies Porr Bau GmbH and Habau GmbH – to execute the project. This, in turn, commissioned the scaffolding specialists XERVON

Austria to develop a solution for the complex shoring structures needed to complete the work.

The main focus of this project is on the 'Erdberger Brücke' (Erdberg Bridge) which was built in the 70s and crosses the Danube Canal. Over the decades, the heavy volume of traffic had had such a detrimental effect on its structure that it had to be demolished and completely rebuilt. Before this could be done, however, two new additional bridges first had to be constructed either side of the bridge, so-called flyovers, to ensure the traffic did not come to a standstill and was not affected, for the most part, by the work being carried out on the main bridge. When the new bridge has been completed in 2017, these additional bridges will remain in place and continue to be used to prevent traffic jams during rush hour periods.

The complex work to erect the shoring scaffolding over the Danube Canal for these two new flyovers began in the middle of 2014. In addition, a further stretch of road had to be built that also needed shoring scaffolding: a ramp road to connect the A23 motorway exit to the southern flyover.

Engineer Anton Stricker, head of the shoring scaffolding division at XERVON Austria, explained what the company had had to take into account when designing the shoring scaffolding for these two additional bridges: "Both bridges consist of eight sections (hollow section framework, 12 metres wide) with a total length of 223 metres and 237 metres respectively. They cross over both the east and westbound lanes of the A4 motorway and have a main span over the Danube Canal of around 45 metres. What was most important here was that our shoring structures had the necessary heights and widths to allow traffic to flow unimpeded." This included both the lanes on the A4 motorway and the various exit and access roads to the A23 motorway



The traffic should, for the most part, be unimpeded by the demolition and rebuilding work

as well as over the Danube Canal itself which is a busy shipping route.

In order to fulfil all these requirements, the scaffolding experts developed a complex structure based on steel girders (rolled steel girders), scaffold beams and scaffold supports (to transfer the load vertically) – all in all comprising a total of approx. 1,000 tonnes of material. The horizontal shoring scaffold section, on which the bridge superstructure and carriageway were built, was made up of rolled steel girders (HEB 300 to HEB 800) up to 80cm thick and of lengths varying between five and 20 metres. The 34m section in the middle of the shoring scaffold, that crosses the Danube Canal, was erected using heavy duty scaffold beams as it has such a long span. Sixteen scaffold beams were joined together to create a 12m wide structure over the water. This, in turn, was connected to further structures – erected using cross girders,

lowering devices and heavy duty vertical scaffold beams – which transferred the load into the ground or into the bridge foundations that had been constructed beforehand.

There were two main challenges that both teams had to face whilst erecting the shoring scaffolding: firstly, the night shift work, when the motorway was closed off so they could set up the rolled steel girders above the carriageway, and secondly placing the 34m long scaffold beams over the Danube Canal. To keep the crane work to a minimum, all 16 scaffold beams were preassembled at the building site on the smallest of spaces and lifted into place – in some cases individually and in others as complete boxes (each weighing ca. 18 tonnes). This work was completed in a single day.

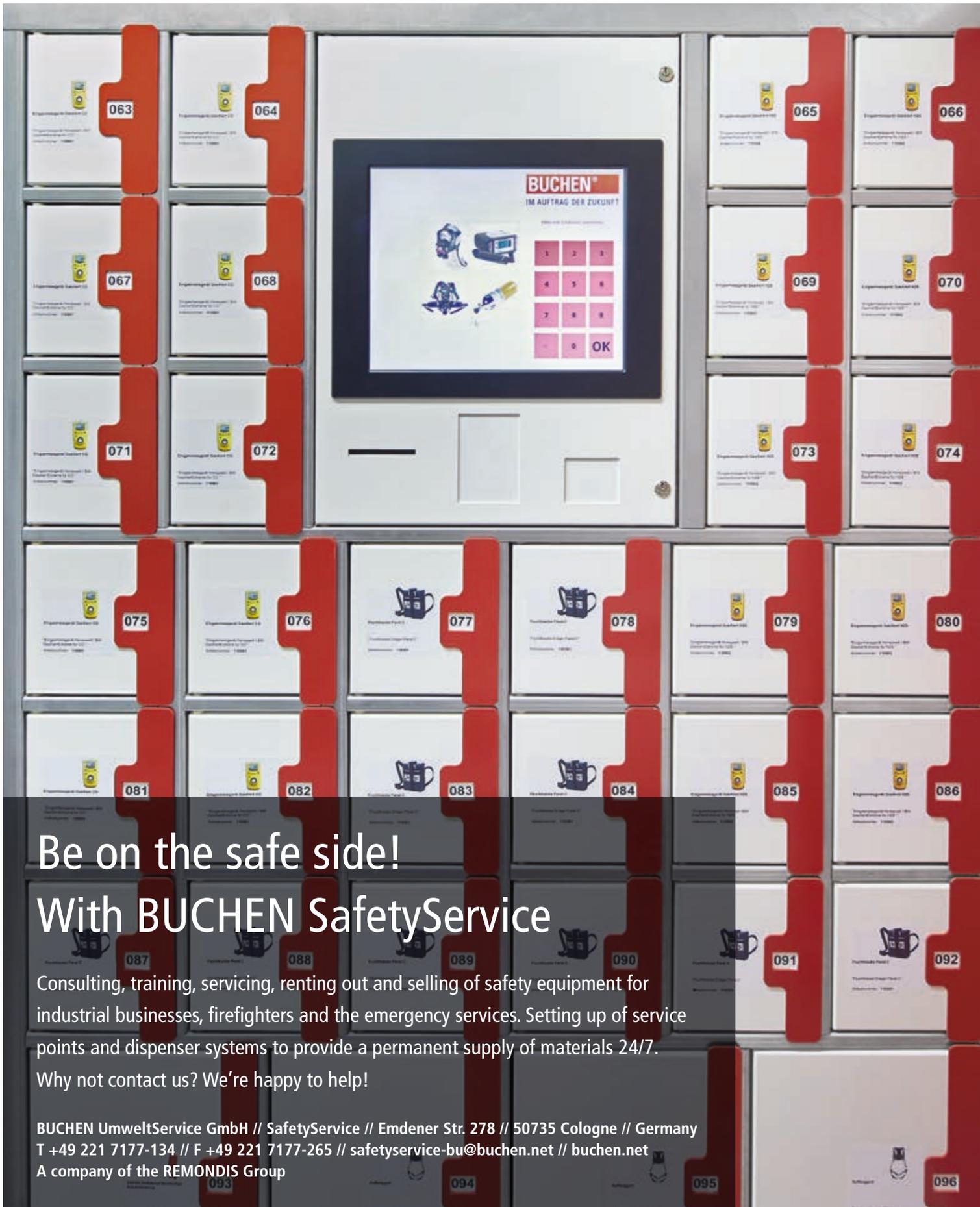
All in all, XERVON Austria erected and dismantled a surface area totalling 6,300 square metres for this project.

**34m**  
Span over the  
Danube Canal

#### SHORING SCAFFOLDING: TEMPORARY STRUCTURES FOR BRIDGE CONSTRUCTION WORK

When in-situ concrete bridges are built, heavy duty shoring scaffolding is needed as a temporary support structure to carry the weight of the new bridge until it is able to bear its own load – i.e. after the concrete has reached full structural strength. In such projects, the shoring scaffolding creates a base for the formwork which holds the liquid concrete and gives it its shape. In the majority of cases, the main component used for shoring structures for spans up to 20 metres (e.g. over major roads and motorways) are rolled steel girders (HEB), which are heavy duty steel beams that can be up to one meter in height. So-called truss girders, however, are deployed for larger spans, for example for erecting bridges over rivers. These are special steel frameworks that bear the load of the structure being built and transfer the load, via heavy duty props, to the auxiliary foundations or the foundations of the new structure itself. Thanks to this type of system, shoring structures can be used for spans between 18 and 48 metres – without the need for any other type of support.

Such complex shoring systems can only be designed and erected by specialist companies such as XERVON Austria which specialises in finding solutions for such major construction projects.



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