

Customer magazine

# up<sup>2</sup>date

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The one thread for your  
maintenance tasks

## Services

BUCHEN's mobile cleaning service removes deposits from bulk containers – quickly, efficiently and safely

## International

XERVON Austria erects huge scaffold structure to help build a 181m-long railway arch bridge

## Group News

BUCHEN and XERVON's wide-ranging QSHE standards recertified following major audit

Mobile cleaning service  
for bulk containers

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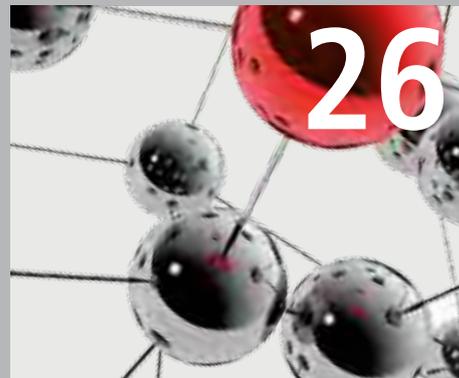
Ingeniously constructed

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Finding new ways

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## EDITORIAL

### Dear Readers!

This latest issue of our up2date magazine reflects our motto, "The one thread for your maintenance tasks", and gives an insight into the wide range of work we perform. At the same time, it aims to show how BUCHEN and XERVON are able to coordinate and optimise work processes at their customers – both individually and as a team. By pooling together our services, we are able to create clever maintenance packages that save time and cut costs, both of which benefit our customers. Our portfolios complement each other perfectly and create a comprehensive all-round package that runs through your maintenance programme like a central thread.

A good example of this are the services we provide for biogas plants. Here, BUCHEN and XERVON support their customers by delivering diverse services such as installing equipment to transform the heat generated by the plants into electricity or cleaning work to maintain the plant's performance.

Moreover, there are additional advantages for other industrial sectors when further REMONDIS Group companies are involved in our projects. Asbestos abatement is just one example here where BUCHEN and XERVON cooperate with REMEX, which manages the transport and disposal of the material on behalf of our customers.

This image of a central thread, as mentioned briefly before, is also reflected by the additional services that are developed in the individual companies and take the changing requirements of our customers into account – for instance XERVON's service to replace membranes. The company performs this work at chlor-alkali electrolysis plants, a task that requires extensive know-how and a great deal of skill.

Last but not least, we believe that creating this central thread means we must develop and work on future issues as well – especially as we are a sustainable and forward-looking service provider. To this effect, we work closely with both research and teaching institutes. It also, of course, means offering apprenticeships that genuinely help those doing the courses. This is precisely what we do. Indeed, one of BUCHEN's former apprentices, training to become a specialist for pipe, canal and industrial services, was recently named best in his field across the whole of Germany.

We hope you enjoy reading this issue and we are sure that you'll be able to find the central thread for your maintenance needs at BUCHEN and XERVON.



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Franz-Josef Englisch



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Jürgen Lennertz



Andreas Rittel

Maintenance

# Threefold success

## FRAMEWORK AGREEMENTS EXTENDED BY 5 AND 10 YEARS

Since 2002, XERVON has acted as a site operator providing comprehensive services to the WACKER Group's business in the Cologne-Merkenich chemical park. The many years of successful cooperation will now be continued thanks to the extension of two framework agreements – for an exceptional ten-year period for the infrastructure services and for five years in the area of maintenance and material management.

XERVON has been responsible for maintenance and infrastructural tasks since 2002 creating excellent framework conditions for its customers at the Merkenich site

In the last few years, while striving to achieve cost-cutting synergies, the German chemical plants became more receptive to other companies setting up business on their grounds. This resulted in the establishment of modern industrial parks in which independent companies operate in different sectors. A service provider often acts as a "site operator" who takes over the site management of the producing companies and renders comprehensive services from a single source.

One such example is the industrial park Cologne-Merkenich, in which both chemical companies Wacker Chemie AG, Munich, and Vinnolit GmbH & Co.KG, Ismaning, operate. Since 2002, XERVON has been responsible for the extensive maintenance and infrastructural tasks there. On the one hand, this involves the mechanical and electrotechnical workshops as well as the technical stores. On the other hand, it covers plant security, the sustainable supply of

energy and media to the production plants, an efficient water supply and sewage disposal, an environmentally friendly waste management, the operation of auxiliary plants as well as the maintenance of pipe bridges, roads, green spaces and closed plant sections. At present, a strong XERVON team of 80 employees is responsible for carrying out all incidental tasks in a proper and professional manner. "But that's not all," explains XERVON site manager, Ulrich Junkes. "Our claim as a full-service provider is always optimisation, the permanent further development of the location. We create optimal framework conditions so that our customers can focus on their core business."

In the last few years, XERVON has convinced both site partners in Cologne-Merkenich, Wacker and Vinnolit, through its extensive know-how and high level of reliability. Nevertheless, the now concluded extension of the framework agreements was not a matter of course. "We called for separate tenders for all three areas," explains Stephan Lahrmann, who carried out the contract negotiations for Wacker Chemie AG. "In the end, XERVON was awarded the contract for infrastructure services as well as for the areas maintenance and material management. The concepts presented were conclusive and persuasive in all matters." Ultimately, REMONDIS taking over the XERVON activities also sent out positive signs. "During the contract negotiations, the management team showed a high level of commitment and was intensively involved in the successful conclusion – up to the financial backing of the site,"

XERVON has set up a wide range of workshops on site, including one that specialises in electro-technology





comments Dr. Marcus Schnell, regional manager at XERVON who is also responsible for maintenance at the Cologne-Merkenich site. He is well aware: "Mutual trust established over many years between the maintenance personnel and operator is, of course, an important factor. Well-coordinated, tried and tested processes result in planning security. On the other hand, however, it is also very important to constantly introduce innovations into the maintenance concepts."

Therefore, XERVON places a great deal of importance on maintaining close communication on and between all levels both internally and externally – with customers, planners and those actually doing the work as well as with the scientific community (also see report on page 26/27). Dr. Schnell provides examples: "Internally, we created an optimisation team which will continue to look at ways to improve

**"Our claim as a full-service provider is always optimisation, the permanent further development of the location. We create optimal framework conditions so that our customers can focus on their core business."** Ulrich Junkes, XERVON site manager for Cologne-Merkenich

processes even after the contract has been signed. Externally, we participate in different research projects and the results obtained influence our maintenance strategies both in the medium and long-term." By doing so, he believes, the company is always open to innovations in all directions, which as a consequence results in more productivity for the customer's core business through optimised service processes.



Multi-Service

# Well-rounded

XERVON AND BUCHEN REHABILITATE A SPHERICAL GAS TANK

**XERVON and BUCHEN are currently working together on a challenging repair job at a plastic manufacturing plant. A 25-metre high spherical gas tank with a diameter of 18 metres, which is erected on pillars, is having its dilapidated fire-resistant coating removed in preparation for a new fire-resistant external shell.**

Just seven months of repair time have been allocated to this project. During this period of time, and under the strictest safety and health regulations, the experts must renovate the spherical tank's approx. 1,500 square metres of steel surface as well as the pillars. The fire-resistant coating is now 19 years old and had begun cracking in several areas due to extreme weathering. To sufficiently protect the tank and its combustible contents, it was necessary to apply a new layer of fire-resistant coating.

XERVON made a bid for the professional implementation of all work required for this job and ultimately received the order. The works involved include erecting scaffolding around the entire spherical tank and fitting a dustproof enclosure, removing the old fire-resistant coating, carrying out high-level purification without leaving any residual matter, applying the new coating as well as installing special fire-protection caps on the inspection openings. Specifically in relation to the elaborate purification work, XERVON project management consulted the BUCHEN experts from the outset. Their know-how and special equipment are contributing significantly to the success of this interesting rehabilitation project.

Since January, the scaffolding, surface technology, corrosion protection, industrial cleaning and insulation departments have been working hand-in-hand on this extremely challenging rehabilitation site. In doing so, they are focused on one requirement above all else – meeting very stringent requirements in terms of health and safety protection as well

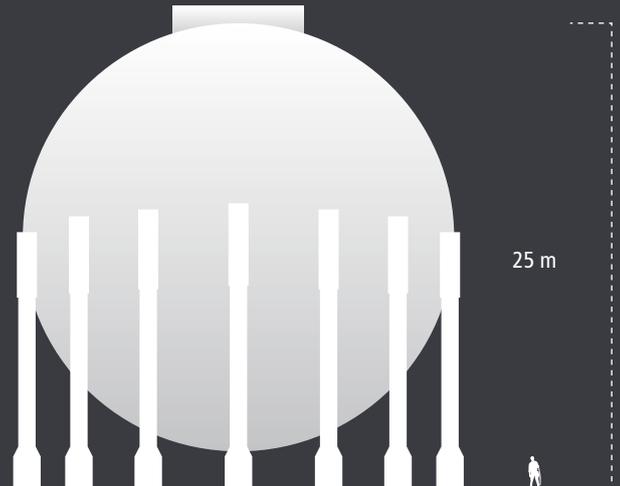
Whilst erecting the scaffolding was a challenge in itself, the tasks that followed (industrial cleaning work, surface technology, insulation) have been just as complex





## FACTS

These types of elevated spherical steel tanks are used to store liquid gasses, which are required to produce plastics, for example. Since they are located in the open air, the steel giants are constantly exposed to weather conditions. Therefore, their external coating needs to be replaced at regular intervals. A diameter of 18 metres and a height of 25 metres result in a steel surface of approximately 1,500 square metres that must be repaired subject to very stringent requirements during a renovation project such as this.



as environmental protection. The requirements regarding the quality of the work are no less demanding. To provide just one example: although the nominal thickness of the coating can vary slightly (be lower) in other construction projects, the specified minimum coating thickness in this particular project cannot be undercut at any point. The manufacturer of the fire-resistant coating system can have this verified by deploying specially trained personnel to the site. However, that stage has yet to be reached, as the coating work has only just begun and is right on schedule.

At the beginning of the year, the XERVON scaffolding team sealed off the spherical steel tank by encasing it in dust-free scaffolding. Since then, access to the renovation site is only possible via a three-chamber air lock so that no environmentally harmful material can escape from the inside. To minimise the exposure of humans and the environment to dust, all of the old, contaminated coating was removed by hand as far as possible. The remaining coating was subsequently sand blasted. Equipped with ventilated special protective clothing, the surface technology professionals treated the tank with blasting abrasive until the required degree of cleanliness on the tank's steel surface had been achieved. Thanks to the use

of the reverse suction device, the resulting mixture of blasting abrasive and pieces of old coating was immediately collected and professionally disposed of.

The BUCHEN purification professionals then began with the high-level purification of the construction site. Using their special powerful industrial suction devices, they removed all the dust left over from the de-coating process from the tank, the pillars, the scaffolding and the enclosure tarpaulin. Thereafter, the insulators were able to install special fire-protection caps on the inspection openings. In the meantime, the corrosion protection specialists from XERVON are on site and are applying a fire-resistant coating to the spherical tank. This coating consists of a special two-component carbon mesh that is sprayed and applied using the airless process.

Now that repairs to the liquid tank are reaching the final stage, the entire process can be viewed positively: All work steps were completed on time, without incident and with high-quality, professional results. Regular bio-monitoring of employees involved in the rehabilitation work has also showed that nobody's health was put at risk while working on this repair site. A great outcome for everyone involved.

The surface of the tank has to be cleaned perfectly before the fire-resistant coat can be applied

# Mobile cleaning service for bulk containers

## BUCHEN FREES SILOS OF DEPOSITS

**BUCHEN offers a highly specialised service for cleaning contaminated and clogged up bulk containers: its mobile silo cleaning service. The cleaning work is carried out using cutting-edge equipment and is fast, efficient and safe as the cleaning operatives do not need to climb into the container at any time.**

Whether it be coal, fertiliser, plaster, cement, cereal, animal feed, salt or clay: no matter what substance is kept in silos, at some stage or other it is going to adhere to the walls or form clumps. This not only results in a build up of debris but also slows the flow of material down and reduces the space available for storage – a classic case for BUCHEN's mobile silo cleaning team.

### Modular equipment

Besides needing to have the relevant experience and know-how, silo cleaning work also requires highly specialist equipment. It is precisely for this reason that

BUCHEN employs special cleaning systems that create a number of advantages. No matter which appliance the team uses, they never have to actually climb into the containers making the task much safer for them. Indeed, this aspect of their work is an important argument in their favour for customers operating in, for example, the food processing industry as such businesses are subject to stringent hygiene regulations. Their work processes are also ideal for the chemicals industry as BUCHEN's gear is both anti-static and spark-proof and so meets the industry's very strict safety standards.

The company uses a modular system for its cleaning work. The various appliances, therefore, can be installed quickly, can be adapted perfectly to the conditions on site and only require a 380 volt power supply. All types of deposits are easily removed with this equipment – and in silos up to 45 metres deep.

### High performance systems

The actual choice of system depends on the requirements of each individual project. In many cases, the team employs the BinWhip®

up to  
**3,000 bar**



To detach the material, carbon dioxide and a small electric charge are used to create a powerful force reaching pressures of up to 3,000 bar

system – a portable hydraulic device that is powered by an industrial explosion-proof motor. The aluminium construction has a high strength, multi-part telescopic arm with a cleaning head attached to the end with flexible whips. This arm is inserted into the container via, for example, a hatch at the top of the silo from where the operative can precisely control the powerful device as it cleans the silo without damaging its walls.

One particular advantage of this system is that it is fully hydraulic. This enables higher torque levels and greater levels of performance to be achieved than would be possible with a conventional compressed-air system. To be able to reach the same level of impact, compressed-air cleaning heads must be operated at much greater speed which makes it more difficult to control their movements. Moreover, the hydraulically powered cleaning heads can be rotated in a clockwise and anticlockwise direction and they create less dust in the interior of the silo.

The BinWhip® system is often used in combination with the BinDrill® system – a drilling device powered by the

same hydraulic unit. This appliance is used, for example, if a bridge of material has formed inside the silo or the silo discharge section has become clogged up. In such cases, the BUCHEN experts first drill a hole through the material and then insert the cleaning head with its flexible whips through the gap into the inside of the container.

### 3,000 bar to remove clumps

If tonnes of material need to be detached within milliseconds, then the BUCHEN team uses the Cardox® system. The compacted materials are broken up by a rapid release of liquid carbon dioxide. Here, the system uses high strength, reusable steel tubes filled with liquid CO<sub>2</sub>. The gas is activated by a small electric charge causing it to expand. It is then released via a discharge nozzle creating a powerful pushing force reaching pressures of up to 3,000 bar. If the container to be cleaned has permanently fitted tube sockets, then the compacted material can even be removed whilst production processes continue as normal. The Cardox® system is also able to be employed at high temperature, for example in waste incineration plants and furnaces.

BUCHEN is one of the first businesses in its industry to have been awarded the quality seal for industrial facility services by the quality assurance organisation, RAL

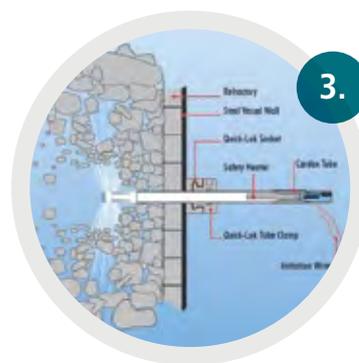
## The three mobile modular systems for cleaning silos



The BinDrill® system can help if a bridge of material has formed inside the silo or the silo discharge section has become clogged up



With this silo cleaning system, the hydraulically powered whips attached to a high strength, multi-part telescopic arm gently remove the deposits from the container



The Cardox® silo cleaning system breaks up clogged-up material in bulk containers by suddenly releasing liquid carbon dioxide

# A clever system – ready for the future!

## USING RESIDUAL HEAT FROM BIOGAS PLANTS TO GENERATE ELECTRICITY

Within the REMONDIS Group, sustainability is considered one of the cornerstones of the corporate philosophy. A special offer from XERVON for the operators of biogas plants is the perfect solution: Even small amounts of gas engine residual heat can be used for the economic generation of electricity with the proper integration of an innovative compact system.

The XERVON specialists travel to the site to make sure the ePack is integrated into the biogas plant correctly



The principle of generating electricity from residual heat is not new. It is based on the so-called "Organic Rankine Cycle" (see text box) and for a long time it has been used in geothermal and biomass power plants. However, the development of ORC systems for small plants is new. The gas engines used at biogas plants are particularly suitable for the so-called "ePack" by Orcan Energy GmbH from Munich (see text box), which can be installed in new plants or integrated into existing facilities. In many cases, there is a dual benefit for the operators: for one, they benefit from an improved economic efficiency of their plants and secondly from public grants provided because they use the power-heat coupling principle.

### THE ORC PRINCIPLE

The Organic Rankine Cycle (ORC) fundamentally works like a conventional steam cycle; however, an organic working medium, which has an evaporation temperature of 20°C, is used in place of water. Under high pressure, the medium is evaporated in a heat exchanger and then the steam is used to generate mechanical energy in an expander. The expander drives a generator which is connected with the electrical network via a frequency converter. The steam is liquefied in a condenser again and fed via a pump to the evaporator under high pressure – a closed circuit. The organic working medium used can be e.g., ammonia, butane or pentane. In the case of the ePack, a medium is used which is non-flammable, non-poisonous, non-combustible and completely harmless.

Many biogas plants work with gas engines that have a capacity of approximately 450 kW, from which a large part gets wasted as residual heat. The ePack (200x120x195cm/ L x W x H) uses this residual heat to generate carbon-free electricity. If installed correctly, this decentralised mini power plant needs a thermal input power of approximately 300 kW in order to deliver 20 kW of electricity.

The tasks of the XERVON experts not only include the installation of the unit on site but also a part of the production of the ePack. For example, they are responsible for the complex piping system used in the modular ePacks. Approximately 100 welding seams as well as precise turning and milling tasks are necessary to join the stainless steel pipeline components. This job is performed by the workshop at the XERVON site in Münchsmünster; equipped with the required technology and the appropriate specialised staff, the workshop has already manufactured several dozen ePacks.

### Custom-made integration

The final installation and commissioning is demanding precision work. XERVON pipeline specialists and E&I technicians set up the compact electricity generation unit on site and integrate it into the existing biogas plant – with all associated pipelines, connections and cabling. "Each site is different and so the work must be adjusted to the local conditions in order to optimally integrate the ePack into the biogas plant operations," explained Robert Liepold. The XERVON project manager has already been responsible for such modifications: "Our experts have a differentiated approach. Often many different job steps are necessary in order to achieve maximum efficiency, safe operation and, if possible, maintenance-free service lives. For example, it may be necessary to renew existing pipelines made of steel,

#### THIS IS HOW THE EPACK WORKS:

stainless steel or plastic. In some cases it is useful to set up coolers, ventilators or heat exchangers.

The electronic integration of the ePack is taken over by the XERVON E&I technicians. They install various sensors within the biogas plant and in the pipelines to the ePack. These points measure the pressure, temperature and other factors which are then transferred via a specially shielded cable to the central control unit of the ePack. Further, the E&I technology team is responsible for the cabling that feeds the generated electricity into the biogas plant's electricity network. All of the electric cables required for this must be laid according to the valid VDE standards and must be checked before they are switched on for the first time. Furthermore, the E&I experts install trace heating which makes sure that no frost damage can occur in the winter.

All in all, there are many small individual measures which, in the end, result in each project being a tailor-made package. "We offer the operator the complete package which is specifically tailored towards their plant situation and creates the most benefits," Liepold summarises the special performance by XERVON.

The ePack was developed by three former employees of the Technical University of Munich who had founded Orcan Energy GmbH especially for this purpose in 2008. Since the commercial field tests were very positive, the ePack is now being marketed and mass produced.

The process, which is protected by several patents, uses innovative control algorithms in order to make the most of existing residual heat sources. The energy of the residual heat (maximum 600°C) is transferred to a hot water intermediate circuit in the heat exchanger. The exhaust gas leaves the heat exchanger with a temperature of at least 180°C so that no corrosion can occur in the downstream components of the plant. With the heat contained in the hot water circuit, the environmentally friendly pressurised medium is evaporated in the evaporator and fed to the expansion machine. This drives the generator. After easing the medium in the expansion machine it is again liquefied in the condenser. The incidental heat is released into the atmosphere together with air or water. The liquefied working medium is then directed to the evaporator again through a pump and the process starts again from the beginning.

#### Dreams of the future

Orcan Energy GmbH firmly believes that the use in biogas plants is only the beginning of the ePack's possible fields of application. Many other uses are possible – for example, in industrial processes where approximately 50 percent of the energy used is wasted as unused residual heat.



#### CORE COMPETENCE BIOGAS PLANTS

In addition to the services rendered by XERVON, BUCHEN also offers a full and comprehensive range of services which includes the cleaning, inspection and maintenance of very different types of biogas plants. On the one hand, this involves the regular professional cleaning of the plant and removal of any residue – with such projects always being managed according to the new legal guidelines. Furthermore, BUCHEN's portfolio includes container coating and coating removal, a filter and catalyst service as well as the cleaning of gas coolers, heat exchangers, pipes and channels so that the operators receive an all-round carefree package for their biogas plants.

Surface technology – Plastocor®

# Smart protection systems

## PLASTOCOR® TUBE LINING AS CORROSION PROTECTION IN COOLING WATER SYSTEMS

**plastocor®**

The name on the product says it all: XERVON Plastocor GmbH coats condensers, coolers, heat exchangers, cooling water pipes, containers and vessels with the special two-component Plastocor® material. This patented epoxy resin-based coating system provides long-term protection against corrosion and erosion. With the innovative “tube lining” variant, interior surfaces of small-calibre tubes – for example in heat exchangers and condensers – can be coated across their entire width and length without having to be disassembled.

There's scarcely a power plant in operation today that does not swear by the Plastocor® coating, which was introduced in 1958. The main application area is in cooling water systems, where the cold-reactive material protects condensers, heat exchangers, pump housings and cooling water systems against corrosion. Thanks to its special formulation, this extremely robust material is, for example, resistant to cooling water, salt water, diverse chemical elements, solid-containing emulsions and liquids at temperatures up to +80°C.

Besides using the Plastocor systems, the XERVON coating experts have other solutions as well to protect equipment against erosion, corrosion and wear and tear, e.g. for appliances and containers, pump housing, containers used for deluge water spray and fire extinguisher systems, storage tanks and industrial water tanks.

There are a number of different processes that complement one another to form an entire coating system that covers all the important parts of a cooling water system. The thick-coating process Plastocor® 2000 was specially developed for use on new tube sheets or those in need of repair. The thick-coating process is a 3–5 mm coating that is generally smoothed manually. The system functions in connection with specially manufactured, conically shaped system connectors that serve as a negative mould to the coating.

Plastocor® 400 is a material that can be manually applied either with a roll or spray. Its properties were specially developed to protect the water chambers of condensers and other heat exchangers from corrosion and erosion.

Using the three-layer coating variant Plastocor® Inlet or Inlet ceramic, the particularly vulnerable tube inlets and outlets measuring up to 400 mm in length can be pretreated to prevent wear and tear, or can be cost-effectively renovated.

Thanks to our years of experience, we have extensive know-how of a wide range of industrial areas and are able to offer our customers cost-effective coating solutions that are specially adapted to meet their specific needs.

New tube inlets and outlets, up to 400mm in length, can be protected against wear and tear with our Plastocor® Inlet procedure. Moreover, this is a low cost method to renovate damaged tubes

XERVON Plastocor uses endoscopy to analyse the damage as well as to carry out the final quality checks at the end of a project



With the "tube lining" process, a machine-based Plastocor processing variant was developed that enabled entire condenser and cooler tubes to be coated on site for the first time. The key advantage here is that the coating applied to the inner tubes significantly slows down the effects of any corrosion or erosion in the pipes and so extends the operational life of the condenser. Progressive deterioration of the tubes and any resulting leaks inevitably require the tubes to be sealed which, in turn, reduces the performance of the condenser. This usually requires partial or total renewal of the condenser. Not so if tube lining is used, as it can slow down this degeneration process significantly. Furthermore, the hydrophobic surface is more resistant to material caking or fouling and is easier to clean.

The coating is applied using a partially automatic and computer-controlled process with the specially developed "tube lining" machine. First, the XERVON Plastocor coating specialists feed a hose fitted with an airless nozzle through

the entire length of the pipe to be coated. Using the airless nozzle, the material is then applied. As the hose is retracted, the inside of the tube is precisely and uniformly coated along its entire length. This special process is perfectly suited for tubes up to 16 metres in length and 18 mm in diameter.

Together with its partner "plastocor international", XERVON Plastocor offers all variants of the special coating worldwide – including all blast-cleaning and ancillary work. The list of customers is extensive: the experienced professionals have been successfully using the Plastocor systems since 1958 – in over 60 countries around the world.



An experiment setup demonstrating the Plastocor® tube lining procedure. Why not take a look at our film?!



# Professional trio

## FULL SERVICE FROM A SINGLE SOURCE

Whoever needs to have flats, parts of buildings or entire buildings containing asbestos professionally renovated and modernised now has the chance of receiving this project-specific service from a single source: the specialised companies BUCHEN UmweltService and XERVON Bauwerkserhaltung cover all fields which are necessary for this special task. Their services are completed by their sister company REMEX, the experts for managing mineral waste within the REMONDIS Group. At the end of the project, the customer receives a properly cleaned and unpolluted building.

Since 1993, the production of asbestos-containing products has been prohibited in Germany, but polluted areas still lurk in many places. In the 1960s and 1970s in particular, the use of these fire-resistant fibres boomed. Roof and façade coverings, windowsills, wall coverings, paints, floor coverings, such as the then popular floor-flex tiles, flooring adhesives, sealing strips, waste-water pipes ... the list of asbestos-containing materials used is long and cuts across the entire housing and industrial construction industry. Asbestos abatements are considered one of the most demanding tasks of decontamination procedures. This is due to the fact that the public reacts highly sensitively towards the topic, and that both tenants and owners are uncertain about the specifics involved in such renovation projects.

a blueprint in the area of pollutant cleanup and describes the protective measures and organisational requirements which are necessary according to the Ordinance of Hazardous Substances.

### Synergies

As soon as asbestos abatements become necessary as part of a refurbishment, renovation or building conversion project, the trio of companies BUCHEN, REMEX and XERVON can offer all tasks which need to be carried out and with just a single management team: the contaminant experts from BUCHEN are responsible for the proper removal and the disposal of the polluted materials; XERVON Bauwerkserhaltung plans and executes all structural works. The duo is complemented by REMEX, which also belongs to the REMONDIS Group. REMEX is responsible for assuming the professional disposal of the mineral materials in accordance with the legal requirements or the dismantling work itself. In this way, the customer has access to a service chain covering all trades and with profound know-how of all areas. The construction knowledge of XERVON Bauwerkserhaltung is supplemented by BUCHEN's years of experience of handling hazardous substances. BUCHEN has been approved to carry out asbestos work for decades now and possesses all the pertinent certifications and examinations required for dealing with asbestos (TRGS 519).

For example, work which results in the removal of the surface of asbestos products is only permitted if it is performed using officially approved low-emission procedures. These authorised procedures – e.g., the removal of asbestos-containing adhe-

3 companies – 1 full service package. All the experts needed to master such a highly sensitive task can be found in the REMONDIS Group



Seriousness and professionalism are all the more important if a company offers such renovation and/or demolition services as the fibres can be released into the air as soon as the asbestos-containing materials are removed. To ensure that nobody gets hurt, the asbestos abatements have been defined in detail in the Technical Rules for Hazardous Substances TRGS 519 "Asbestos; demolition, renovation or maintenance works". In Germany, it is considered



Only specially qualified employees are permitted to remove the materials containing asbestos

sive and base plates – are listed by the Institute for Occupational Safety in the BGI 664 information sheet. Only a few companies, however, develop special procedures which are then incorporated in these rules. BUCHEN, for example, is currently in the process of having a company-related grinding procedure approved with which they will be able to remove asbestos-containing adhesive in an effective and fibre-free manner.

Only employees that have been appropriately trained and qualified handle the removal of polluted materials and document that the building is free of hazardous substances. The professionals registered in the German Employer's Liability Insurance Association not only undergo a regular occupational medical examination, but are also under constant medical observation through long-term biomonitoring. Furthermore, comprehensive technical equipment is necessary for high-quality pollutant cleanup: for example, personnel and material air showers, vacuum devices plus accessories, measuring devices to determine pollution levels, modified grinding devices, safety suction equipment, residual fibre bonding agent etc.

### Safety first

In practice, no two renovation projects are the same. The tasks required depend on the type and volume of the asbestos-containing materials as well as the planned further renovation or demolition work. However, there is a typical order of events: samples are gathered during the first site survey and then analysed in order to be able to draw up a meaningful risk assessment. This, in turn, leads to the

planning of suitable safety measures. In the next step, the inspection authority and the employers' liability insurance association are informed. Once this has been done, the construction site and all necessary safety measures are set up. After removing the asbestos-containing materials, the following tasks are carried out: precision cleaning of the construction site as well as separation and disposal of all polluted materials. Once a final measurement – effectively checking the success of the project – has confirmed that the construction site is safe, all the safety measures are lifted and work on the building can be continued.

Incorporated in such a professionally planned full service package, even such a critical project such as asbestos abatement becomes less threatening for the customer. "Our comprehensive service offer from a single source is unique," BUCHEN, REMEX and XERVON are sure of this. "Each of our divisions represents absolute professionalism. Together we are able to plan, coordinate and execute even major renovation and modernisation projects in a responsible manner."

### PLAYING IT SAFE

In addition to asbestos, buildings can contain any number of hazardous substances. When released, these hazardous substances pose a health risk to humans. Before a modernisation, conversion or demolition project can begin, a risk assessment must first be carried out to check whether safety measures are necessary when handling construction materials, or if the removal of the materials from the site could be problematic. The building owners must inform the companies carrying out the project about any potential hazardous substances. Here, too, the companies of the REMONDIS Group are able to support you.

Before such a renovation project can be implemented, our experts must first analyse material samples and carry out a detailed risk assessment

# Tact and sensitivity a must

## MEMBRANE REPLACEMENT IN CHLORINE ELECTROLYSIS PLANTS

The growing popularity of a very new process for chlorine production has created a new service: the replacement of membranes in chlorine-alkaline electrolysis plants. This is time-consuming manual work that demands the skill and know-how of the XERVON specialists performing the task.

XERVON specialises in carrying out this complex work. Its team of accredited experts have been delivering this service to their customers since 2010

Chlorine and caustic soda are essential for many processes used by the chemical industry. Therefore, many chemical parks have their own production facilities on site. These highly sought-after materials are produced electrochemically in special membrane electrolysis plants. Source material is a simple common salt solution (sodium chloride). When charged with electricity, it results in chlorine, concentrated caustic soda and hydrogen.

At the end of the 19th century, different processes were developed in order to be able to obtain the materials in the purest possible form; however, these processes used substances such as asbestos and mercury which are harmful to the environment. The membrane electrolysis process, which not only manages without the use of harmful substances but also uses a significantly lower amount of electricity, was only developed recently.

Within a few years, this new process has conquered the market. Today, the electrolysis of sodium chloride to

manufacture chlorine and caustic soda has become the world's most important electric membrane process. The crucial component here is the special type of membrane which allows positively charged  $\text{Na}^+$  ions to pass through but not the negative anions  $\text{OH}^-$  and  $\text{Cl}^-$ . Dependent on the current density used, there is a gradual build up of foreign particles on the active membrane which requires it to be changed at regular intervals: this is referred to as remembraning.

As one of the very first companies to provide chemical parks with maintenance services, XERVON started working on professionally replacing these membranes early on. Today, a specialised team has been assembled which is optimally equipped to handle this task. The job is a real challenge testing the care and accuracy of the experts performing the tasks. It takes several weeks until all the membranes have been replaced in a chlorine electrolyser. Such electrolyzers are made up of more than 150 square chambers which are arranged next to and above one another and each with its own membrane. Each chamber is an independent element which

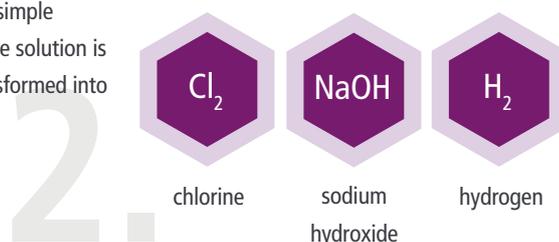
### ELECTRO-CHEMISTRY FOR LAYMEN

What happens during chlorine-alkaline membrane electrolysis?

A rapid exchange of ions occurs when an electric current is introduced into a container of saline solution (sodium chloride/ $\text{NaCl}$ )



The simple saline solution is transformed into





is composed of two half shells; the shells are connected to one another through four steel frames with a large number of screws. In the middle between both of the half shells – supported by a grid – there is a cloth-like membrane about three square metres in size.

The company has developed its own special method to replace the membranes which involves a number of individual steps and much dexterity from the XERVON experts. This much can be revealed however: It requires a lot of skill to dismantle the individual elements, to insert the membrane, to screw the elements together and to reassemble them. Moreover, the membrane must be flawless and be positioned perfectly because, if a few elements fail, the efficiency of the chlorine-alkali electrolyser decreases rapidly. After the restart, the computer monitoring unit immediately shows which chambers are functional and which are not. The last thing anyone wants is to have to redo the work.

The XERVON experts completed an extremely successful membrane replacement project on a membrane electrolyser at the Marl chemical park back in 2010–2012. Now they are working at the “CHEMPARK” in Leverkusen. Here, since the beginning of 2013, they have been independently managing and implementing a remembraning project on behalf of the plant manufacturer ThyssenKrupp Industrial Solutions from Dortmund. In close cooperation with all parties involved, up to 15 certified assembly employees are in the process of carrying out this sensitive assembly work.

Rolf Esch, a welding specialist and the XERVON manager responsible for this project, knows what is important: “After the dismantling work, we look at the individual elements very carefully for trace of wear and coordinate with the customers with regards to which maintenance tasks are necessary. It goes without saying that the documentation of all works carried out in and around the electrolyser is also part of our job”. The job has not been successfully completed until the weeks of intensive work are over, all new elements have been given the okay and chlorine production has restarted.



If a special membrane is used to separate the container into two halves then only the positive Na<sup>+</sup> ions are able to cross through; the different substances are isolated from one another



The chlorine, produced by the anode, and the hydrogen and sodium hydroxide, produced by the cathode, can be removed separately. Unwanted secondary reactions are avoided



chlorine



sodium hydroxide



hydrogen

**A few advantages of this process:**

- Use of harmless materials
- Less electricity consumption
- The electrochemically produced products are pure and can be extracted separately
- The salt solution is optimally used through the circuitry; the salt requirement is only 1.7 kg NaCl/kg chlorine

# As good as new: reconditioning plate heat exchangers

## SPECIAL SERVICE CENTER PROVIDES FAST AND EFFICIENT PROCESSING

**BUCHEN** has been offering an all-round service for the reconditioning of plate heat exchangers (PHE) for five years now. The devices are repaired professionally at its PHE service facility in Merseburg.

Heat exchangers are used where surplus energy should be absorbed from one medium and transferred to another medium. This is an energy-saving principle which we come across every day – for example, in heating and ventilation systems or in our cars etc. Industrial businesses also use these versatile heat-transmitting devices in their processes. Plate heat exchangers (PHE) are often installed for this purpose. These have a special construction which is made of undulated profiled plates. The system is constructed in such a manner that the medium to be heated or cooled flows into the consecutive compartments first with the medium which is to absorb the cold/heat following afterwards.

PHEs are subjected to various stresses: load change, different temperatures and pressures and the medium flowing through the exchanger itself can, for example, lead to a build up of deposits in the pipes, wear out the

gaskets or even damage the actual plates. The contact points between the individual plates are further potential sources of wear and tear. Therefore, all PHEs must be regularly examined, cleaned and provided with new gaskets. The inspection intervals and maintenance requirements of our customers are as varied as the purpose and conditions of use of the PHEs themselves.

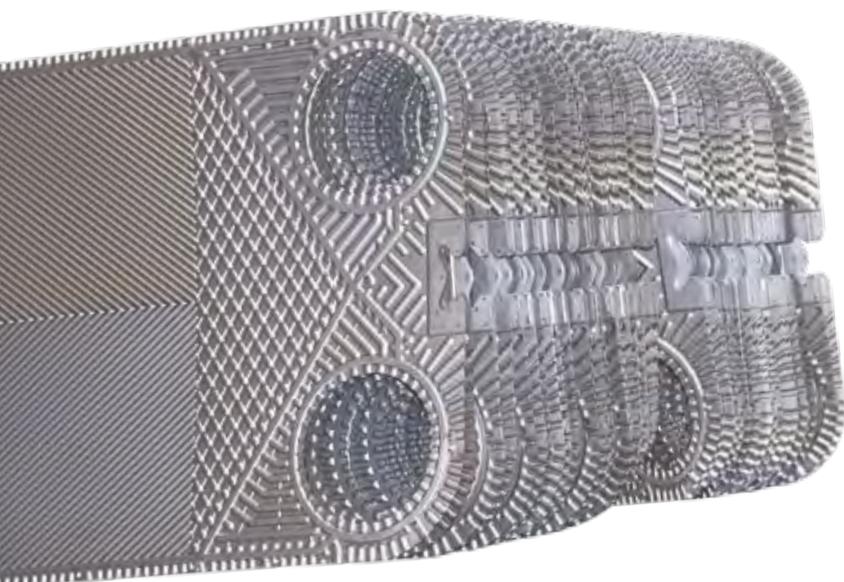
This is where BUCHEN's special service comes into play: for the past five years, the company has been successfully operating a service centre geared towards the reconditioning of plate heat exchangers. A well coordinated system has been set up in Merseburg to be able to service these devices and process all customer inquiries quickly and efficiently. Both the qualified personnel and the appropriate technical equipment are on hand to recondition all brands of PHEs independent of any particular manufacturer.

### Reconditioning includes:

- The removal of old gaskets
- Cleaning the plate heat exchangers (chemical cleaning plus a final high-pressing cleaning)
- Checking the plate heat exchangers with fluorescent penetrants in accordance with DIN EN ISO 3452
- Installation of new original or replacement gaskets (different materials and fastening methods)

Expertly conducted reconditioning work ensures a longer service life and minimises the risk of unplanned production stoppages. A complete examination and reconditioning of the PHE is recommended; at the latest, when all gaskets need to be replaced.

The plates from a heat exchanger after they have been removed and chemically cleaned in an immersion bath



“We are now personally able to carry out complex customer requests,” explains Jan Zimmermann, Head of Plate Heat Exchanger Service. “Within a short period of time we are able to recondition a large number of various heat exchanger brands in a high-quality fashion. Irrespective of which media they are filled with and, thus, the level of contamination. All customer specifications are fulfilled.” The BUCHEN team also offers their service on site for those companies that do not wish to send their heat exchangers to the service centre at Merseburg: high-pressure cleaning of dismantled PHEs or even a special chemical cleaning process for assembled PHEs.



For the most part, the plate heat exchangers are reconditioned by hand, in particular when the new gaskets are put in place

“Naturally, our service also includes the procurement and delivery of spare parts for plate heat exchangers of all brands. For example, gaskets, heat-transmitting plates, moulded rubber parts, port rings etc.,” elaborates Zimmerman and adds: “As part of our complete service we also offer the proper dismantling and/or reassembly, pressure test and commissioning of heat exchangers of all brands.”

The package provided by the PHE service centre in Merseburg has generated a great deal of positive response. This is demonstrated by the significantly increased number of PHEs processed and the long list of customers from the chemical and petrochemical industries, the heavy industry as well as the energy and food sectors.



A fluorescent substance is sprayed onto the plates to reveal any holes, cracks or signs of corrosion

# Ingeniously constructed

## DEMANDING SUPPORTING STRUCTURE FOR THE CONSTRUCTION OF AN ARCH BRIDGE

On behalf of the Wiener Porr Bau GmbH and the Austrian Infrastructure Railway Construction, XERVON Austria has been supporting the construction of a new 181-metre long railway arch bridge by developing and assembling an extremely complex supporting structure. During the construction period, the bridge bearing structure as well as the arch bridge made of reinforced concrete and weighing 12,000 kN (approx. 1,224 tonnes) are being supported by a 91-metre long freely supported framework construction made from heavy-duty girders.

One particular challenge of this project has been erecting the complex suspended scaffolds of varying sizes, especially those around areas difficult to access

The Österreichische Bundesbahn (ÖBB) [Austrian Federal Railways] is looking to reinforce the existing railway section from Linz – Selzthal for heavy rail traffic. This requires the new construction of various bridges along the route. For example, work began in Upper Austria last year to build a new viaduct above the dammed Steyr River. The bridge bearing structure – an arch bridge with an elevated carriage-way – is being constructed directly adjacent to the existing steelwork bridge which was built in 1905.

### The bridge construction

The superstructure of the new bridge – a double webbed tee beam (overall height 2.15 m) – is composed of a total of nine bridge segments with spans between 14.50 metres up to 18.00 metres. It is supported by a 4.20 metre wide reinforced concrete arch which crosses the Steyr River with a span of 97 metres and – at its highest point – is approximately 25 metres above the water. The reinforced steel arch is to be manufactured in three sections: first the base plate, then the footbridges and finally the cover plate.

These are just a few basic details of how the bridge is to be built. However, until the bridge has been completed, it requires an extremely stable auxiliary construction which must fulfil two tasks simultaneously: It must provide a safe basis to manufacture the individual bridge segments and simultaneously it must safely transfer the loads to the foundations during the construction phase. This is a somewhat simplified summary of what the supporting structure must do.

### The shoring system

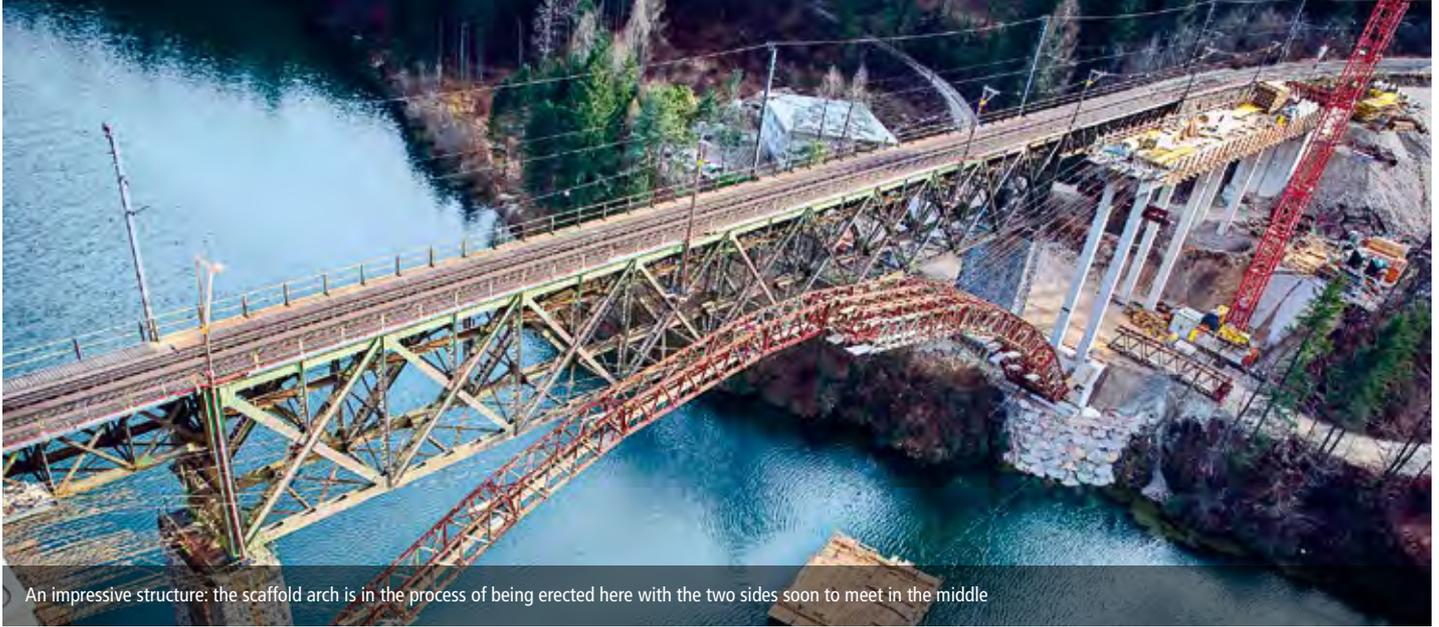
This was a task for experts, which is why Porr Bau looked for support from XERVON Austria. Both companies are connected through a long-standing, trusting business relationship from having carried out many successful projects together. XERVON Austria's shoring system experts also developed a custom-made concept for the bridge construction site on the Steyr River, which meets all requirements. The heavy duty T50 girders are the most important element of the 91-metre, free-standing shoring construction. They have been adjusted to the curved structure with the help of arch elements in a polygon-shaped design. Three girder boxes, each composed of six individual beams, form the cross-section of the shoring system. The distance between the girders in the outer boxes is 1.50 metres and in the centre box 1.35 metres. The complete shoring construction is supported on both abutments. Not directly however. There are a total of 24 hydraulic adjusting ring presses arranged between the foundation and shoring system with a bearing capacity of 1,000 kN. They take over the horizontal and vertical load transfer.

# 91 m

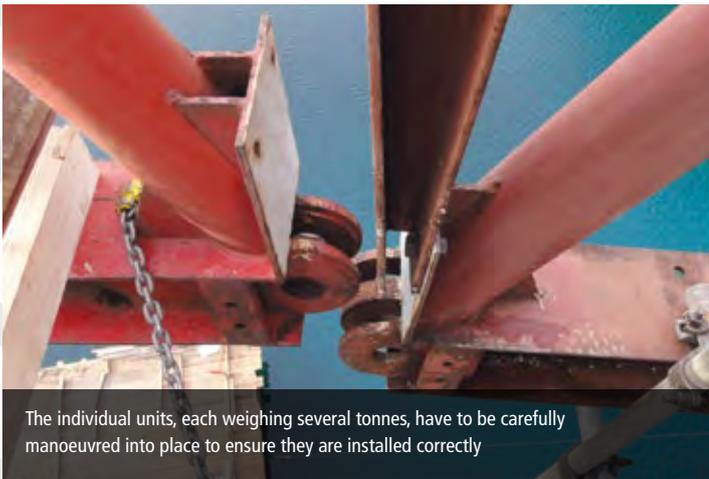
The length of the self-supporting scaffold structure being used to build the reinforced concrete arch

# 12,000 kN

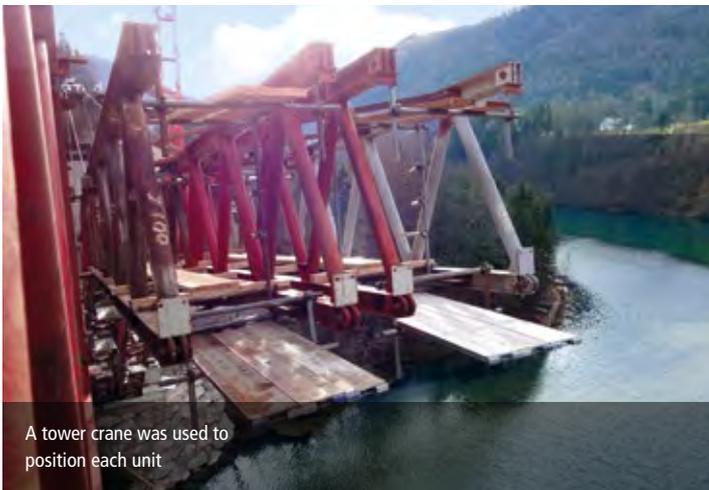
The weight of the new reinforced concrete arch that is to bear the bridge superstructure (the equivalent of 1,224 tonnes)



An impressive structure: the scaffold arch is in the process of being erected here with the two sides soon to meet in the middle



The individual units, each weighing several tonnes, have to be carefully manoeuvred into place to ensure they are installed correctly



A tower crane was used to position each unit



The completed scaffold arch connected at its apex

The assembly of the arch falsework began last December and was carried out box by box in units of six to fourteen metres in length. During this process, the individual units were lifted into the right position by stationary tower cranes and then anchored back to the already completed superstructure in the foreland zone with the help of pull rods. This provides stability.

After the experienced five-member XERVON shoring construction team had erected the 200-tonne shoring system arch from both sides up to the crown area, it was finally joined together hydraulically in January. Meanwhile, the concrete constructional work to manufacture the 12,000 kN, reinforced concrete arch is in full swing. As soon as it is completed and the concrete has hardened, the auxiliary shoring system arch will be hydraulically lowered, laterally pushed under the construction and dismantled again. The bridge is expected to be completed by autumn.

# A well insulated boiler

## SOPHISTICATED WORKS AT EGYPT'S FIRST EVER "SUPERCRITICAL" POWER STATION

Ain Sukhna is a tourist resort on the Red Sea situated about 100 kilometres east of Cairo, the capital of Egypt. A highly efficient thermal power station is due to open up there at the end of 2014, which will be fired by oil and gas and have an output of 2 x 650 megawatts. This is a very important project for Egypt as it will cover part of the rapidly increasing demand for electricity in the country. It will also be Egypt's first ever "supercritical" power station – the name given to power stations with steam generators operating above the critical pressure.

⚡⚡⚡⚡  
**2 x 650**  
megawatt output

XERVON Egypt stands  
for punctual, safe and top  
quality work

The Korean company, DOOSAN Heavy Industries, has been building this very special Egyptian plant for the Egyptian Electricity Authority EEA under the project management of the Egyptian engineering firm "Power Generation Engineering & Service Co. or PGESCO". Financed by the World Bank Group, this new-build project comprises an enclosed turbine building, an open boiler building and a control room as well as other operations and ancillary structures.

XERVON is responsible for the very critical task of insulating the boilers to protect them against heat loss including all pressure and non pressure parts, boiler furnace and mechanical rotary equipments – as well as for all access and scaffolding solutions. This is the third such project that XERVON Egypt S.A.E. has carried out. During all three projects, their customers have been particularly impressed by the high quality of the company's work, their ability to stick

Practically all of the scaffolds required for this power station, with its complex geometry and great heights, are bespoke constructions





to the schedule and the fact that there has not been a single safety-related incident.

During the busiest periods, XERVON has deployed up to 350 employees at the power station construction site in Ain Sukhna to make sure that the necessary insulation work on the pipes and other boiler components are completed within the tight schedule. The project management team together with the on-site construction, quality, HSE and planning teams are in close contact with direct workers throughout the project to ensure that no-one is impeded from doing their work and that there is no time wasted. This is true for both the insulating specialists as well as for the scaffolders who have to erect sophisticated scaffolding constructions to provide safe working platforms. Indeed, practically all of the scaffolds required for this power station, with its complex geometry and great heights, are bespoke constructions. "Off-the-peg" scaffolding is rarely called for here.

"Once again, this project in Ain Sukhna has shown us to be an extremely efficient, competent and reliable service provider and our team's previous experience and understanding for this type of project have helped us a lot," commented Amr Aldeeb, business development manager and Mohamed Marey insulation division manager at XERVON Egypt, who are really pleased with the way work has progressed at the site. "This sort of positive news gets about and creates a great basis for future work."

#### WHAT IS A "SUPERCRITICAL" POWER STATION?

Water is unable to boil above the so-called critical point. To be able to reach this supercritical state, the water must have a temperature of at least 374.12°C and a pressure of at least 221.2 bar. It is then as dense as a liquid but has the viscosity of gas. Steam power stations that work with such high water temperatures are called supercritical power stations. They normally operate with an average steam pressure of 242 bar and temperatures around 565°C.

# For the very large ships

STRATEGIC COOPERATION WORK WITH DANZIG SHIPYARD BASED ON A LONG-STANDING PARTNERSHIP

For decades XERVON has been active on many important shipyards in Germany and Europe. Traditional scaffolding is part of the core competence of the marine-oriented company locations. This is also the case in Danzig, where XERVON provides the Gdańska Stocznia Remontowa shipyard with comprehensive scaffolding services.





**“Our most important arguments are competence and adherence to schedules.”**

Beata Nowakowska, branch manager scaffolding

The Danzig shipyard, founded in 1952, is one of the leading European repair and reconstruction shipyards. Since it was privatised in 2001, the shipyard has had a close business relationship with XERVON Polska: The close collaboration in the first few years ended in the conclusion of a framework agreement in 2007. Furthermore, in 2013, a strategic cooperation agreement was signed for an indefinite period.

Whether reconstruction, repairs or maintenance: no shipyard can survive without scaffolding. Sometimes the entire hull is scaffolded and enclosed in order to renew corrosion protection; for other projects, the superstructures must be replaced or extensive reconstructions carried out. All these different tasks cannot be completed without complex scaffolding structures. These structures demand the know-how as well as the speed of the scaffolding professional – simply because idle periods are linked with excessive costs.

XERVON scaffolding has three large material storage locations at the Danzig shipyard and access to more than one hundred well trained scaffolding fitters. Branch manager Beata Nowakowska is responsible for the construction engineers and builders who see to the development and calculation of the sometimes highly complex scaffolding constructions. In many cases, complicated modular scaffolding systems are erected around the outside and inside of ships to enable the repair or conversion work to be carried out safely. Or sections of a ship are scaffolded and protected with a temporary weather proofing cassette roof against adverse weather conditions. Inside the enclosed structure, for example, corrosion protection works can be carried out under defined climate conditions.

For the Danzig scaffolders all these scenarios are part of everyday life. “Our most important arguments are

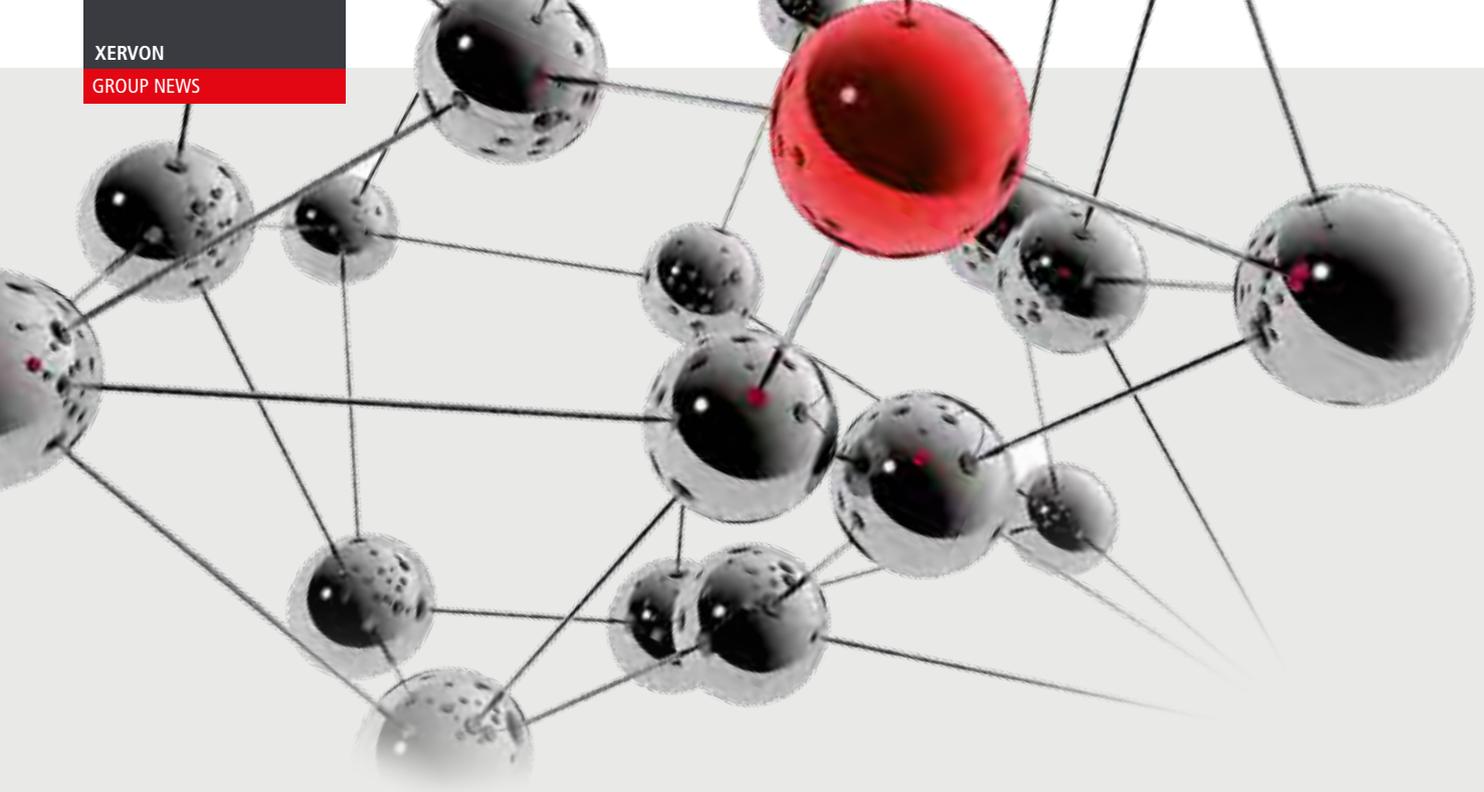


Huge amounts of scaffolding material have to be moved around the shipyard – another masterly logistics performance



Work cannot be carried out on the ships without complex suspended scaffolds which often have to be erected at great height and in places that are difficult to access

competence and adherence to schedules,” explains Beata Nowakowska. The Polish scaffolding expert has established herself well in this male domain and wants to continue to expand the Danzig XERVON branch in the next few years. “Our stated goal is to achieve another increase in our market share. We want to be market leaders – but with a distinct distance to our closest competitor,” Beata Nowakowska says confidently. The expansion efforts have succeeded: XERVON Polska has already successfully concluded a number of large-scale scaffolding jobs in Gdynia, also located in the Danzig bay (headquarters of the Polish Navy), where it has been working for Remontowa Shipbuilding helping the company to build new ships. The company’s portfolio is now in the process of being expanded: New services, for example working with LDP shrink tarpaulins, are currently being introduced. Excellent prospects, therefore, for healthy growth.



Research projects

# Finding new ways

RECOGNISING AND TACKLING THE FUTURE CHALLENGES IN COOPERATION WITH THE SCIENTIFIC COMMUNITY

As a forward-looking and sustainable industrial service provider, XERVON maintains close contacts with German universities. Mutual research projects provide the company with important impulses for the successful development of innovative strategies.

Fundamental research combined with practical implementation – this is the way XERVON finds answers to future challenges

The working world has changed rapidly over the last two decades and this trend is continuing. Now more than ever, industrial producers and service providers are having to face a number of challenges – such as demographic change, resource efficiency, sustainability, increasingly complex industrial processes, site questions and the continuously increasing influence from information and communication technologies to name just a few. Sustainable solutions can only be found in a combination of basic research and practical implementation. Therefore, XERVON is closely linked with different scientific institutions through active participation in different research projects.

about shaping the future, and about developing future structures: “We take our responsibility concerning sustainable and resource-conserving actions very seriously. The point of view of the scientific community is very useful here. At XERVON, research is not only a corporate commitment, it is also a catalyst for personal further development and enables us to take a broader view. Finally, it is also used for the benefit of our customers,” explains Dr. Marcus Schnell.

At the moment, there are three large research projects in which XERVON Maintenance is involved in under the leadership of Dr. Schnell. On the one hand, there is the “Resource efficient maintenance logistics RESIH” project that began in mid-2010 and aims to find ways of using existing resources in spare parts logistics more efficiently. The aim: an analysis of the present resource consumption with focus placed on “material and spare parts” as well as identifying possibilities to sustainably reduce this consumption through suitable

“We look to collaborate with research and teaching institutes because we wish to create the foundation for the development of innovative concepts,” comments Dr. Marcus Schnell explaining the close cooperation. Commercial reasons do not play a primary role in this commitment. This is



FUNDED BY



maintenance measures. Although the project will still be under way until the beginning of next year, XERVON has already been able to use the knowledge gained to set up a stringent materials management system at a maintenance division at an industrial park.

Another research project is called "CHEM-LOG.NET". Set up for a three-year period, the project, which focusses on materials management, is examining the location and cross-company optimisation of spare part stocks. The project runs through mid 2015 and is part of the "Logistics.NRW" main topic.

### Against the shortage of experts: Life-long learning

The most recent research project was the major project, ELIAS, started on 1 December 2013. The acronym stands for "Engineering lernförderlicher industrieller Arbeitssysteme [Engineering industrial working systems conducive to learning]". The project, funded by the Federal Government, will develop and test new possibilities of in-company learning in cooperation with the RWTH Aachen University. New forms of in-company learning should be made an integrated part of work and production processes. Those taking part in this joint project ([www.projekt-elias.de](http://www.projekt-elias.de)), which runs until the end of 2016, include FIR Forschungsinstitut für Rationalisierung e.V. [Research Institute for Rationalisation] at RWTH Aachen University, XERVON GmbH, the Deutsche MTM-Vereinigung e.V. [German Methods-Time Measurement Union], Werkzeugmaschinenlabor WZL [machine tool laboratory] of RWTH Aachen University, Zwiesel Kristallglas AG, HELLA KGaA Hueck & Co. and FEV GmbH. Working together, they wish to develop new approaches and concepts which will make it possible to design work and production systems that are conducive to learning from the outset or to change existing systems accordingly. The expected result is a holistic planning tool which makes it possible for service and production companies from different sectors to integrate the promotion of learning into their systems.

A demanding project which is as ambitious as it is necessary. The increasing dynamics and complexity of industrial production and service processes have meant that learning requirements are also growing continuously. One of the consequences of shortened innovation cycles and increasingly complex and networked industrial processes is that employees must acquire more knowledge and further skills in a short period of time. At the same time, society continues to age and the job market has fewer experts. Against this backdrop, new approaches to in-company learning

**"One of the main challenges of the fourth industrial revolution will be to develop teaching and learning concepts based on new technologies to instruct employees how to carry out their future tasks."** Roman Senderek, FIR Project Manager

would appear to be essential if the innovative and competitive ability of the German companies is to remain at the same high level in the future. The traditional in-house teaching systems will not be able to achieve this.

Therefore, new approaches are needed that integrate the promotion of learning as a basic component in the development of working and production systems. The ELIAS approach should become an integral part of modern working and production systems and simultaneously exhaust the potential of the latest information and communication technologies. The objective is to support the acquisition and maintenance of skills throughout an employee's entire working life and to develop new target groups for vocational training. The inclusion of older people will play a particularly important role here. With the number of skilled workers on the job market falling, it will become necessary to ensure older employees continue to perform well.

Within the ELIAS research project, XERVON is responsible for the "configuration and assessment of qualification measures". The company will transfer the concept developed within the scope of this joint project across the whole of the group and will further develop its personnel development concepts. The concept itself will aim to redesign service processes to promote learning. Primarily it will be about professionalising the employee training methods already in place and enabling them to be evaluated in line with business objectives. At the end of the day, this is an investment that should not be underestimated and which should benefit all those involved – both employees as well as the company.

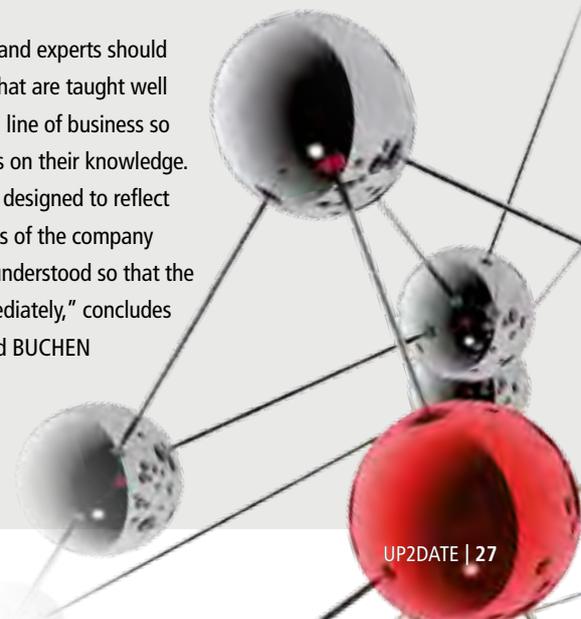
"Our operations managers, specialists and experts should participate in further training courses that are taught well and that are relevant to their work and line of business so that they, in turn, are motivated to pass on their knowledge. The further education concept must be designed to reflect the concrete and strategic requirements of the company and the contents must be taught and understood so that the participants can implement them immediately," concludes Werner Hempeler, head of XERVON and BUCHEN personnel development.

Ministerium für Wirtschaft, Energie,  
Industrie, Mittelstand und Handwerk  
des Landes Nordrhein-Westfalen



EUROPÄISCHE UNION  
Erwachsenen Bildung  
Europäischer Fonds  
für regionale Entwicklung

New approaches of in-company learning appear to be very urgent in order to secure the innovative and competitive ability



# A career with a future

## GERMANY'S BEST SPECIALIST FOR PIPE, CANAL AND INDUSTRY SERVICES WAS TRAINED AT BUCHEN

The vocational and advanced training programmes at BUCHEN and XERVON have always had a high priority. Our apprenticeships are in high demand. After completing the interesting and diverse period of training, men and women committed to learning can look forward to some excellent future career opportunities.



Thomas Klopsch from BUCHEN RaffinerieService GmbH, Specialist for pipe, canal and industry services

XERVON and BUCHEN offer the following apprenticeships:

- Plant mechanic
- Office clerk
- Roofer
- Electronic technician
- Warehouse logistics specialist
- Specialist for pipe, canal and industry services
- Scaffolder
- Wood and structural protection specialist
- Industrial insulator
- Industrial manager
- Information technology manager
- Industrial mechanic
- Painter and varnisher

Around 230 young people are currently doing an apprenticeship at BUCHEN and XERVON. As industry service providers, both companies count on having well-trained specialists.

These specialists are largely trained by the companies themselves. The following applies to all persons in our vocational training programme: anyone who completes their vocational training with a good overall evaluation will be hired on as a full-time employee.

The range of apprenticeships offered by the companies is as diverse as their fields of activities (see left-hand margin).

For example, an extremely interesting apprenticeship is the three-year dual training programme to become a "specialist for pipe, canal and industry services". Last year, Thomas Klopsch from BUCHEN RaffinerieService GmbH in Schwedt an der Oder completed his dual training programme with an outstanding overall evaluation: the Chamber of Commerce Ostbrandenburg designated him as Germany's best in his field of specialisation. For him it was a first; however, it was the second such award received by his "vocational training firm", which has now been honoured twice for having Germany's top apprentice. This is proof of the high quality of the programme. Within the framework of their "dual" vocational training programme, the apprentices gain both important practical knowledge as well as the skills required to succeed in their future profession. Thomas Klopsch particularly praises the support and dedication shown by his trainers: "They always had time for us and were very devoted to their task." The training was also very multifaceted: "We spent time working in many different trades and within very different areas; for example, in the fields of welding technology,

or the technology of air conveying systems." Theoretical specialist knowledge is primarily taught in the vocational school. Subjects there cover technical mathematics, chemistry, English, German, sport as well as economics and social studies. The external part of the vocational training programme includes the following areas: metal processing, electrical engineering, measuring technology, regulation technology, domestic water and environmental technology, vehicle technology and laboratory work. It also includes the preparation for the intermediary and final examinations.

Even if being accepted for this training programme does not mandate any particular certificate or graduation, most of the programme's participants have earned a certificate of secondary education or intermediate-level education. Knowledge in chemistry, physics and mathematics are requirements for understanding the equipment and systems that need to be repaired and maintained. This is a job that carries a high degree of responsibility, therefore necessitating both a high level of prudence and consideration for safety. In addition, both manual and technical abilities are required. This is also confirmed by Thomas Klopsch: "This job is so attractive to me because it is very diverse and I am always learning new things and using the latest technology. Furthermore, we work at various locations throughout Europe – either for installations or assembly work – and that part of the job is extremely interesting." His most challenging job to date was an assignment in London where he cleaned a 100-metre smokestack at a waste recycling plant without damaging its coating. A job for an experienced professional who truly understands the special equipment required for this job.

### BACKGROUND INFORMATION

At the end of their apprenticeship, the specialists for pipe, canal and industry services at BUCHEN are able to disassemble parts from large-scale industrial systems in preparation for cleaning. They are also able to apply the physical or chemical cleaning processes. They help to analyse system breakdowns and work on getting the systems up and running again. Using high-pressure water technology to remove residues and impurities is part of their job. For example, specialists for pipe, canal and industry services are able to clean and renovate tanks the size of a football pitch. There are many opportunities for advancement in our company: All of our specialists have the opportunity to participate in advanced training seminars and internal training offered both domestically and abroad. They can advance to the position of process specialist or from worker to master tradesman and engineer. Within the organisation they can become operations manager or even regional manager.

# Once again, comprehensively certified

## BUCHEN AND XERVON HAVE BEEN ABLE TO SUCCESSFULLY EXTEND THEIR QSHE CERTIFICATIONS

Quality, Safety, Health and Environmental protection systems have been established components of the company philosophy for many years at both industrial service providers BUCHEN and XERVON. It is a matter of course that the companies are certified in the most important European standards of quality and safety and – more importantly – that they can execute their work according to these requirements at their customers.

XERVON was audited in November and December 2013; BUCHEN at the beginning of the year: Both companies were once again able to convince the auditor teams representing the independent certification organisations of their high level of efficiency and the high standards of their quality management, occupational safety, health and environmental protection systems. The certifications, which have now been successfully extended, cover quality management in accordance with ISO 9001, environmental management in accordance with ISO 14001, OHSAS (Occupational Health and Safety Assessment System) as well as SCCP (Safety Certificate Contractors for Petrochemicals) – the highest possible of the three SCC certification levels. This also includes the renewed certification of ten BUCHEN locations as a specialist waste management company as well as the certification of both XERVON locations in Cologne-Merkenich and Münchmünster in accordance with ISO 50001 energy management.

“We are really very proud of our employees. The audits made it clear that our employees do in fact live and breathe the systems which they have been developing and perfecting for years. Working according to these rules has become part of everyday life for the colleagues on site,” reflect Dr. Peter Röhrig and Thomas Stumpf, both equally impressed. In an executive role, both of them are responsible for the QSHE area (Quality, Safety, Health and Environmental protection) – one at BUCHEN and the other at XERVON. They co-developed the process-oriented management systems which are now implemented every single day and have become a part of the company culture.

### Certification without examination stress

“Our employees are made aware of these topics from the beginning,” both QSHE experts know. By now the systems are so firmly anchored in the business that the process was stress-free with relatively little work required to prepare for the audit. This type of audit lasting several days was carried out by auditors of the certification organisation. The audit had the character of a final examination. The independent experts do not only look at the “files” where all procedures and methods used to process an order are described in detail. On site they randomly check whether the employees have familiarised themselves with the guidelines and whether they implement them in their everyday work.

In principle, these guidelines are based on the legal requirements and the conditions which the companies themselves prescribe, most of which go above and beyond the guidelines. In order to make sure that these requirements are adhered to and can be documented in each work process, the management systems provide the exact approach for each application in their process descriptions.

Everyone involved benefits: The customer receives a safe, high-quality and problem-free service provided by qualified employees; the company benefits from the efficient work-flows; and the employee returns home just as healthy as when he/she left for work.

The audits have shown that working according to the rules has become part of everyday life for the colleagues on site



In black and white: the new certificates provide proof of our reliable and well-functioning quality, safety, health and environmental protection processes

Recycling

# Staying "cool" with high-tech

REMONDIS INVESTS HEAVILY IN FIRE PROTECTION AND WORK SAFETY MEASURES

Thermally treating waste which cannot be used for materials recycling is per se a good thing. The property of this waste that makes it suitable for this form of treatment, i.e. the fact it burns well, can cause problems elsewhere however. Under no circumstances should a fire be allowed to break out when waste is being pre-treated, sorted and packed. Not only would such an event mean the recyclable materials would be lost for ever, the plant machinery would be damaged or, in the worst case scenario, be destroyed. It goes without saying that top priority is always given to keeping both employees and local residents safe. REMONDIS has, therefore, been planning ahead and has invested heavily in fire prevention measures.

A fire is detected within seconds so that it can be put out just as quickly

Wherever work processes involve inflammable materials, it is always advisable to have extra special targeted preventative measures in place which can detect a fire in its very early stages and put it out. REMONDIS has recently invested money and technology at a number of its facilities to ensure that a fire is put out within seconds of it starting so that it is unable to develop and cause greater damage.

At Entsorgungsgesellschaft Mecklenburg-Vorpommern in Bargeshagen near Rostock, a company in which REMONDIS owns a share, a total of 16 interconnected infrared and UV sensors have been installed that can detect an unusual increase in temperature in the input material long before a person could possibly pick up the danger. In such a case, the sensors set off the fire extinguishing system within just a few seconds so that it is impossible for a fire to break out. Other investments include a new mobile poly fire-fighting system

using so-called CAF (compressed air foam). CAF employs a process whereby the extinguishing agent is mixed with water under great pressure to create a foam making it easier to zero in on a particular area and, if required, from a distance. Furthermore, 100,000 EUR alone were invested in a new air cleaning system run using state-of-the-art technology with a combination of bio and activated carbon filters which clean the exhaust air in the plant in the best possible way and prevent any pollutants from being released.

Similar technical measures have also been installed at other locations. These new systems can sound the alarm within just a few seconds. Within moments the water to put out the fire (2,000 litre/minute at 10 bar) can be accessed so that damage to people, machinery or the environment can be prevented. Put simply, REMONDIS has placed safety at the very top of its list of priorities.

Recycling

# Take-back systems for new environmental technologies

REMONDIS IS RESEARCHING INTO THE RECYCLING OF COMPOSITE INSULATION BOARDS

Germany's so-called 'energy turnaround', i.e. to change its energy supply from fossils to renewables, is in full swing even if the process has been slowed down a little as a result of the new political constellation in Berlin following the last general election. The move towards wind power, photovoltaics and improving energy efficiency levels of buildings is progressing faster than originally planned. If this hugely important project is to be a true success, however, then the question of how to recycle this new environmental technology must also be taken into consideration right from the start.

Wind turbines also have a limited 'shelf life'. The same is true for solar cells and the material used to insulate buildings. If a truly sustainable energy sector is to be created, then it must include the recycling and extensive re-use of the materials that make such an energy turnaround possible in the first place. REMONDIS is, therefore, calling for the creation of take-back systems targeted precisely at such materials so that sustainable processes can be set up to ensure such energy technology is returned to the economic cycle. Germany has not been slow to introduce take-back systems in the past. There are now take-back systems for waste electrical equipment, for batteries, for old industrial and commercial plastic packaging and there is even a take-back system for used photovoltaic modules, the latter being the first step ever taken to recycle renewable energy equipment. However, simply taking back a material is not enough. It is a long path before a commercially viable recycling method can be developed.

This is precisely what REMONDIS' recent pilot test has been looking at. As part of its research and development activities, the company has been working together with students at the University of Münster and carrying out practical tests to see whether the individual parts of composite insulation boards, which are being used more and more on buildings nowadays, really can be separated from each other and

recycled. These tests are being held at R&R Rohstoffrückgewinnung und Recycling's plant in Mettmann in North Rhine-Westphalia, a company partly owned by REMEX. The results have been promising. The tests have shown that it is possible to separate the individual components of these boards without having to change the everyday operations of a construction waste sorting facility. Looking at the majority of the output, however, it has not yet reached the quality for materials recycling. Initial conclusions are that the components could be separated more cleanly from each other by changing the amount of time the material spends in the mechanical sections of the plant or storage areas or by using other types of mechanical processes. The next tests to be carried out by the University of Münster will shed further light on this issue.

REMONDIS is carrying out tests to develop ways of recycling composite insulation boards





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