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2014

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WORKING FOR THE FUTURE

XERVON®

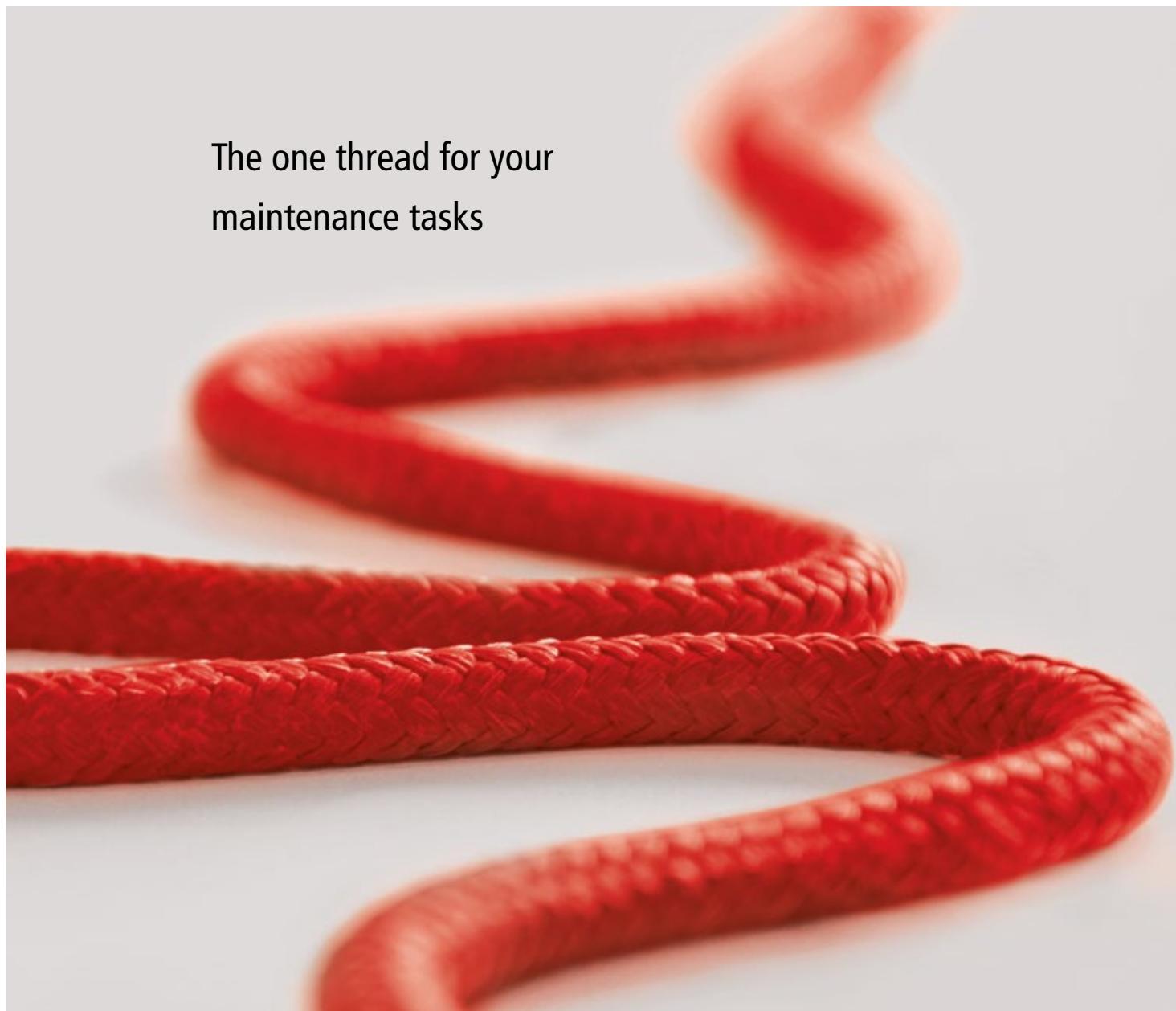
WORKING FOR THE FUTURE

Customer magazine

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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

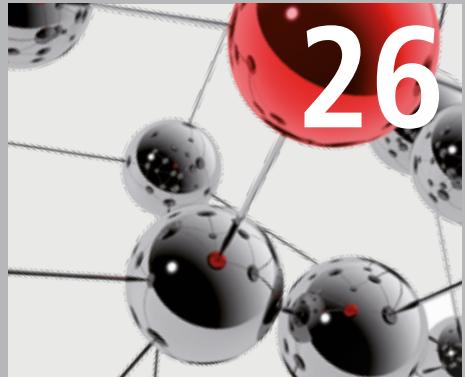
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Finding new ways

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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 above, 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.



Hans-Dieter Behrens



Matthias Ebach



Franz-Josef Englisch



Olaf Karrass



Carsten Lange



Jürgen Lennertz



Andreas Rittel

Threefold success

FRAMEWORK AGREEMENTS EXTENDED BY 5 AND 10 YEARS

Since 2002, XERVON has acted as a site operator with comprehensive services in the chemical park Cologne-Merkenich on the site of the WACKER Group. The many years of successful cooperation will now be continued by extending the framework agreements – for an exceptional ten-year period for the infrastructure services and for five years in the areas 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 the establishment of further companies. 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. One the one hand, this also includes the mechanical and electrotechnical workshops as well as the technical storage. On the other hand, it also includes plant security, the sustainable supply of the production plants with energy and telecommunications, 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 have successfully processed 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 concentrate on their core business."

In the last few years, in Cologne-Merkenich, XERVON has impressed both site partners 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 Dipl.-Ing (Univ.) [graduate engineer] 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, even REMONDIS taking over the XERVON activities sent out positive signs. "During the contract negotiations, management showed a high level of commitment and was intensively involved in the successful conclusion – up to the financial backing of the site," Dr.-Ing [Doctor of Engineering] Marcus Schnell, regional manager of

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





XERVON and also responsible for maintenance at the Cologne-Merkenich site. He is convinced: "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 and decisive 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, executors as well as with the scientific community (also see report on page 26/27). Dr. Schnell provides examples: "Internally, we created an optimisation team responsible for ensuring ongoing improvements, even after the contract has

"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 concentrate on their core business." Ulrich Junkes, XERVON site manager for Cologne-Merkenich

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



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.

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

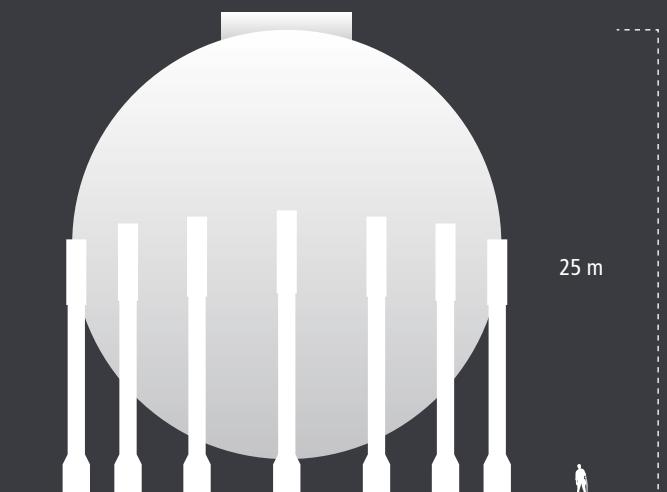
as the tight deadline.





FACTS

These types of elevated spherical steel tanks are used to store liquid gases, 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.

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

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.

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 CO₂. 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 plants for the low capacity range is new. Gas engines from biogas plants in particular are extremely suitable for refitting and retrofitting with the so-called "ePack" by Orcan Energy GmbH from Munich (see text box). 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 into a heat exchanger and finally, the steam in an expander is used to generate mechanical energy. 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. This residual heat uses the 200 x 120 x 195 centimetre (L x W x H) small ePack, in order to recover the CO2-free electricity from it. The decentral mini power plant which has been correctly integrated needs a thermal input power of approximately 300 kW in order to deliver 20 kW of electricity.

The tasks of the XERVON experts also include this integration on site but also a part of the production of the ePack. For example, they are responsible for the complex piping in the modularly set up ePacks. Approximately 100 welding seams as well as precise turning and milling tasks are necessary to join the stainless steel pipeline components. This was a job performed by the workshop at the XERVON site in Münchsmünster; a job where the required technology and the appropriate specialised staff had already manufactured a dozen ePacks.

Custom-made integration

The final installation and commissioning is demanding precision work. Pipeline specialists and E&I technicians from XERVON 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 case of operation is different and must be exactly coordinated with the local conditions in order to optimally integrate the ePack into the process flow of the biogas plant," 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

THIS IS HOW THE EPACK WORKS:

may be important to renew existing pipelines made of steel, 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 E&I technicians of XERVON. They install various sensors within the biogas plant and in the pipelines to the ePack. On these measuring points, the pressure, temperature and other sizes are measured and are transferred via a specially shielded cable to the central control unit of the ePack. Further, the E&I technology is responsible for the proper cabling to feed the generated electricity into the electricity grid of the biogas plant. 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. In total it results in many small individual measures which, in the end, account for the tailor-made integration. "We offer the operator the complete package which is specifically tailored towards their plant situation and thus, results in optimal benefit," Liepold summarises the special performance by XERVON.

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

The process, which is protected by several patents, uses innovative control algorithms in order to optimally exhaust the existing residual heat sources. In the heat exchanger, the energy of the maximum 600°C hot residual heat is transferred to a hot water intermediate circuit. 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 pressurised medium, which is not harmful to the environment, 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 ePack's possible fields of application. Many other uses are possible – for example, processes in the industry 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 comprehensive full range of services which include cleaning, inspection and maintenance of various biogas plants. On the one hand it includes the regular professional cleaning and removal of residues of the plant and project management according to the new legal guidelines. Furthermore, the range of services offered by BUCHEN includes container coating and coating removal, the 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 after all.



Surface technology – Plastocor®

Smart protection systems

PLASTOCOR® TUBE LINING AS CORROSION PROTECTION IN COOLING WATER SYSTEMS



The name on the product says it all: XERVON Plastocor GmbH coats condensers, coolers, heat exchangers, cooling water pipes, containers and vessels with the two-component Plastocor® special material. The patented epoxy resin-based coating system provides long-term protection against corrosion and erosion. With the innovative “tube lining” processing 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, the 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.

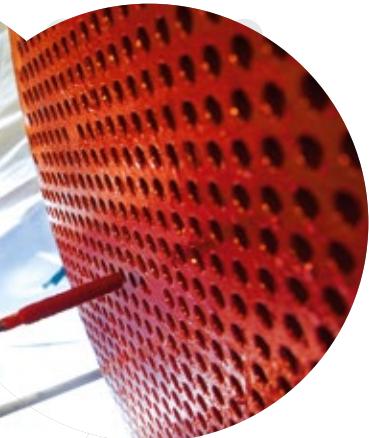
There are various processing variants that complement one another to form an entire coating system for all important system parts of the cooling water system. The thick-coating process Plastocor® 2000 was specially developed for use on new tube sheets or those in need of repair. The thick-coating process 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 pre-treated 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.

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

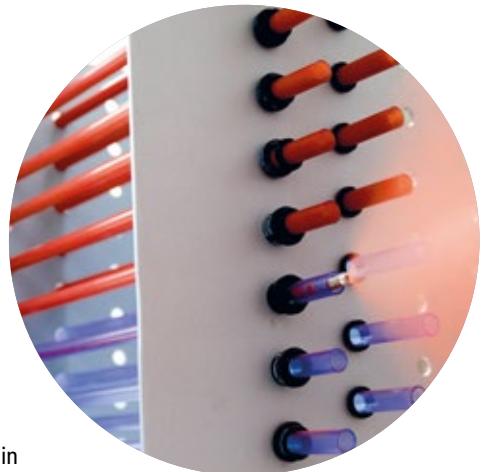


With the "tube lining" process, a machine-based Plastocor® processing variant was developed that enabled on-site coating of the entire condenser and cooler tube for the first time. The key advantage here is that the coating applied to the inner tubes significantly slows down the effects of any corrosion or erosion in the pipes and so extends the operational life of the condenser. Progressive deterioration of the tubes and the resulting leakiness inevitably require the tubes to be sealed. This results in a loss of power from the condenser and potentially reduces energy efficiency. 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 asbestos-containing flats, parts of buildings or entire buildings 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 the affiliate REMEX, the experts for mineral disposal services of the REMONDIS Group. The customer receives a properly cleaned and unpolluted object.

Since 1993, the production of asbestos-containing products in Germany has been prohibited, but polluted areas still lurk in many places. In the 1960s and 1970s in particular, the use of 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 restoration. Seriousness and professionalism are all the more important if a company offers

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 incur within the framework of modernisations, re-establishments or conversions of objects, the trio of companies BUCHEN, REMEX and XERVON can offer all tasks which need to be carried out in this type of project under single management: 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 mineral materials in accordance with the legal requirements or the deconstruction. In this way, the customer has access to a service chain across the trades with profound know-how of all areas. The construction knowledge of XERVON Bauwerkserhaltung is supplemented by the many years of experience of BUCHEN in handling hazardous substances. For decades BUCHEN has been approved for activities involving asbestos 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

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



the restoration or the demolition of the building concerned. As soon as the asbestos-containing materials are removed, the previously bound fibres can be released and can enter the air. 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

adhesive and base plates – are listed by the Institute for Occupational Safety in the trade union information BGI 664. Only a few companies 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 the subsequent freedom from 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 vacuum, residual fibre bonding agent etc.

Safety first

In practice, renovation work is all very different. It complies with the type and scope of the asbestos-containing materials as well as the planned further renovation or demolition work. However, there is a general flow chart: samples are gathered from the first site survey and analysed in order to be able to create a significant 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, followed by the construction plant and equipment as well as the set up of all necessary safety measures. After removing the asbestos-containing materials, the following tasks are carried out: precision cleaning of the construction site, separation of all polluted materials and then disposal. Once a final clearance measurement – success check measurement – has confirmed the harmlessness of the construction site, all the safety measures are lifted and work on the object can be continued.

Incorporated in such a professionally planned complete measure, even such a critical project such as asbestos abatement for the customer becomes less threatening. "Our comprehensive service offer from a single source is unique," BUCHEN, REMEX and XERVON are sure of this. "Each of our departments 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, the building can contain any number of hazardous substances. When released, these hazardous substances pose a health risk to humans. Within the scope of a risk assessment, a test is conducted prior to the modernisation, conversion or deconstruction of buildings. The examination is conducted in order to verify whether safety measures are necessary when handling construction materials, or if the removal of the materials from the site could be problematic. The information on possible hazardous substances has been made available by the building owners for the companies carrying out the task. 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 successful distribution 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 used in many processes of the chemical industry. Therefore, many chemical parks have their own production on site. In specific membrane electrolysis plants, the materials in demand are produced electrochemically. 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 materials 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 presents the world's most important

electric membrane process. A decisive component is the specific membrane which allows positively charged Na^+ ions to pass through but not the negative anions OH^- and Cl^- . Dependent on the current density used, the active membrane impinged with foreign particles must be changed in regular intervals (approx. every three to six years): this is referred to as remembraning.

As one of the first chemical park maintenance technicians, XERVON started to work with the professional replacement of these membranes early on. Today, a specialised team has been assembled; the team is optimally equipped to handle this task. The job is a real challenge for 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. It is composed of more than 150 square chambers which are arranged next to one another and each one contains its own membrane. Each chamber is an independent element which is composed of two half shells; the shells are

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/NaCl)

1



sodium chloride

The simple saline solution is transformed into

2.



chlorine



sodium hydroxide



hydrogen



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 know-how can tell you in which individual steps and with which special refinements the XERVON experts carry out the membrane replacement. Only this much is clear: It requires a lot of skilled tactfulness to dismantle the individual elements, to insert the membrane, to screw the elements together and to reassemble them. The membrane must not be impaired by any bends or even the slightest damage. This is because if a few elements fail, the efficiency of the chlorine-alkali electrolyser decreases rapidly. After the restart, the computer monitoring immediately shows which chambers are functional and which ones aren't. A time-consuming rework is not desired.

In 2010–2012, in the Marl chemical park, the XERVON experts already completed an extremely successful membrane replacement at the membrane electrolyser installed there. Now they are working at the "CHEMPARK" in Leverkusen. Here, since the beginning of 2013, they have been independently completing the remembranring on behalf of the plant manufacturer ThyssenKrupp Industrial Solutions from Dortmund. In close cooperation with all parties involved, up to 15 certified assembly employees have completed the sensitive assembly work in parallel.

The XERVON project manager responsible and welding specialist Rolf Esch knows what is important: "After the proper dismantling, 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". Once chlorine production has restarted after intense work weeks and all elements are okay, that is when the job has been successfully completed.



If a special membrane is used to separate the container into two halves then only the positive Na^+ 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 hydroxid



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

Plate heat exchanger service

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. The devices are repaired professionally at the PHE service facility in Merseburg.

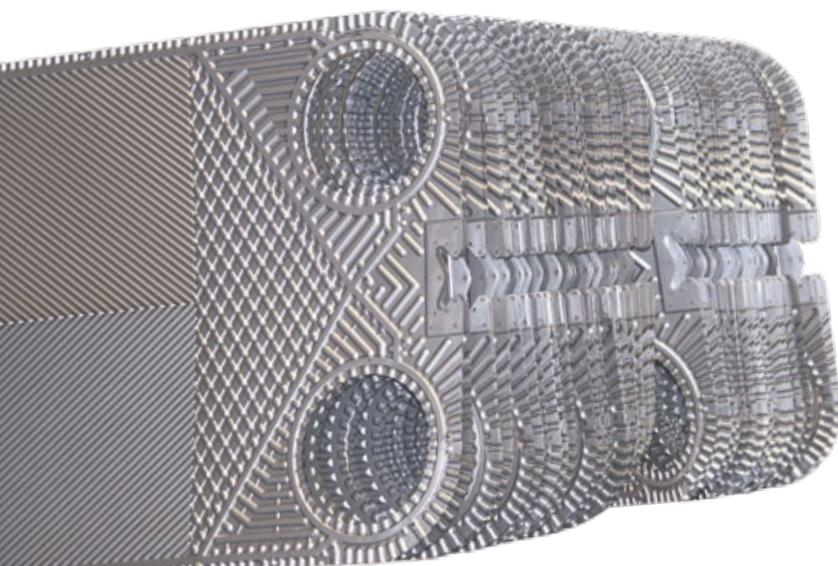
Heat exchangers are implemented where surplus energy should be absorbed from one medium and transferred to another medium. This is an energy-saving principle which we face every day – for example, in heating and ventilation systems or in our cars etc. Even the industry uses these versatile heat-transmitting devices in its processes. Plate heat exchangers (PHE) are often used for this purpose. It refers to a special construction which is made of undulated profiled plates. These are composed in such a manner such that the medium to be heated or the medium to be cooled and after that the cold- and heat-absorbing medium flows into the consecutive compartments.

PHE are subjected to various stresses: load change, different temperature as well as compression ratios and the flowing through medium itself, for example, result in coatings inside of the pipes, allowing the gaskets to wear. This can also

lead to plate damage. Even the contact points between the individual plates belong to the potential sources of wear and tear. Therefore, all PHE must be regularly examined, cleaned and provided with new gaskets. As different as the operation purpose and conditions of use of the PHE are, that's also how diverse the test intervals and the maintenance demands of our customers are.

Here, the service speciality of BUCHEN 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. In Merseburg, in order to be able to process all customer inquiries quickly and efficiently, everything is aligned to the technical service on these devices. Both the qualified personnel and even the appropriate technical equipment are ready in order to properly recondition the PHE of all brands in a manufacturer-independent manner.

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



Reconditioning includes:

- The removal of old gaskets
- Cleaning the plate heat exchangers (chemical cleaning plus a final high-pressure 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)

An expertly conducted reconditioning 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.

"We are now personally able to operate 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 charged with and thus, how differently the contamination turns out. All customer specifications are fulfilled." Those that do not just want to send their heat exchangers for complete reconditioning to the service centre at Merseburg, the BUCHEN team can also offer the service on site: high-pressure cleaning in a dismantled condition or even special chemical cleaning for the assembled condition.

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



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

The offer of the PHE service centre in Merseburg has generated a great deal of positive response. This is demonstrated by the significantly increased units of processed PHEs and the long list of customers from the areas of chemical industry, petrochemistry, heavy industry, energy generator and food sector.



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

Shoring system service

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 is supporting the new construction of a 181-metre long railway arch bridge with the development and assembly of one of the most demanding supporting structure solutions. During their construction, the bridge bearing structure as well as the arch bridge made of reinforced concrete and weighing 12,000 kN (approx. 1,224 tonnes) are 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 carriageway – 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 spans the Steyr River with a span of 97 metres and – at its highest point – it is approximately 25 metres above the water. The reinforced steel arch is manufactured in three sections: first the base plate, then the footbridges and finally the cover plate.

Those are the raw constructive details of the completed bridge. 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 transfer the existing loads securely to the foundation during the construction phase. Thus – explained in simple terms – the requirements of the supporting structure can be captured in a nutshell.

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 many successful projects concluded together. The shoring system experts of XERVON Austria 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 constructions. They are adjusted with the help of arch elements on the arch centre in polygon-shaped design. The cross-section of the shoring system creates three girder boxes which, in turn, are composed of six individual carriers. The carrier offset in the outer boxes is 1.50 metres; the offset in the centre box is 1.35 metres. The complete shoring construction is supported on both abutments. Not directly however. There are a total of 24 pieces of 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

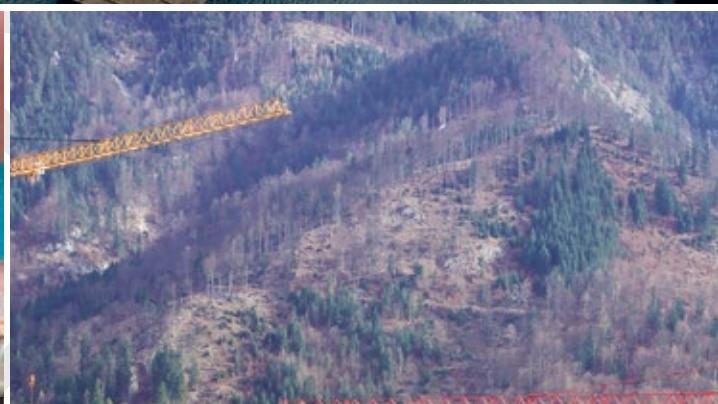
The weight of the new reinforced concrete arch that is to bear the bridge superstructure (the equivalent of 1,224 tonnes)



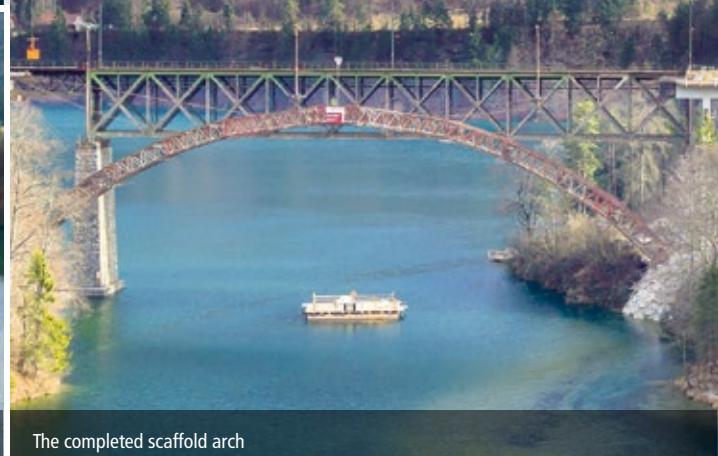
An impressive structure: the scaffold arch is in the process of being erected here with the two sides soon to meet in the middle



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

Last December the assembly of the arch falsework was started. The assembly is performed in units of six to fourteen metres in length. In the process, the individual units were lifted with stationary tower cranes to the desired place and finally 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 erected a 200-tonne shoring system arch from both sides up to the crown area, it was hydraulically closed in the last work step in January. Meanwhile, the concrete constructional work for manufacturing the reinforced concrete arch weighing 12,000 kN 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.

Scaffolding and insulation

A well insulated boiler

SOPHISTICATED WORKS AT EGYPT'S FIRST EVER "SUPERCritical" POWER STATION



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 back to back. During all three projects, their customers have been particularly impressed by the high quality of the company's work, their ability to

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





stick 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 dpt. 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° Celsius.

Scaffolding

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 operates the Gdańsk Stocznia Remontowa shipyard and offers comprehensive scaffolding services.





"Our most important arguments are competence and adherence to schedules."

Beata Nowakowska, site 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 contract on strategic collaboration for an indefinite period was signed.

Whether reconstruction, repairs or maintenance: no shipyard will survive without scaffolding. Sometimes the entire hull is scaffolded and enclosed in order to renew corrosion protection; for another project the superstructures must be replaced or extensive reconstructions must be 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 the idle periods are linked with excessive costs.

XERVON scaffolding at the Danzig location is represented by three large material storage locations and has access to more than one hundred well trained scaffolding fitters. Site manager Dipl.-Ing [graduate engineer] Beata Nowakowska is responsible for construction engineers and builders who see to the development and calculation of the highly advanced scaffolding constructions. Or a ship is scaffolded in sections and protected with a temporary weather proofing cassette roof against adverse weather conditions. In the internal enclosure 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 competence and adherence to schedules," explains Beata

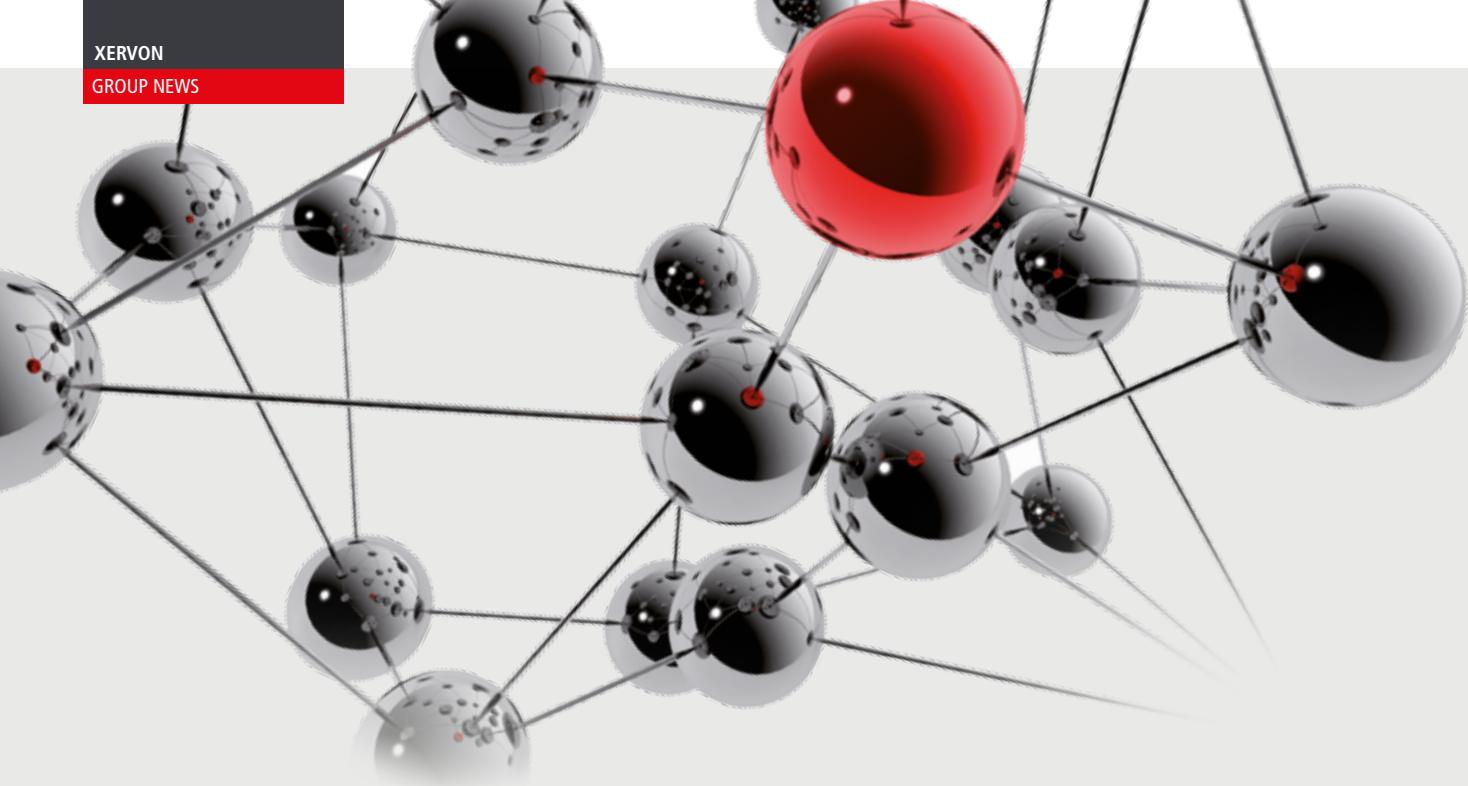


Huge amounts of scaffolding material have to be moved around the shipyard – another masterly logistics performance



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

Nowakowska. The Polish scaffolding expert 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 scaffolding jobs in Gdynia, located in the Danzig bay (headquarters of the Polish Navy) and works in shipbuilding for Remontowa Shipbuilding to a large extent. Now the portfolio of the offered services will be expanded: New services, for example working with LDP shrink tarpaulins, are currently being introduced. Excellent prospects 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, demographic change, resource efficiency, sustainability, increasingly complex industrial processes, site questions and the continuously increasing influence from information and communication technologies are only a few of the challenges faced by the industrial producers and service providers. 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.

responsibility concerning sustainable and resource-conserving actions very seriously. In doing so, the point of view for the scientific community is helpful for us. At XERVON, research is not only a corporate commitment, but it is also a catalyst for personal further development and provides us with ability to take a broader view. Finally, it is also used for the benefit of our customers," Dr. Marcus Schnell.

At the moment, there are three large research projects in which XERVON Maintenance is involved under the leadership of Dr. Schnell. On the one hand there is the project that began in mid-2010 "Resource efficient maintenance logistics RESIH", where the declared aim was the more efficient use of existing resources in spare parts logistics. The aim: an analysis of the present resource consumption with focus placed on "Material and Spare parts" as well as identifying possibilities which would help sustainably reduce the consumption through suitable maintenance measures. Although the pro-



FUNDED BY



"We are searching for collaboration in research and teaching because we wish to create the foundation for the development of innovative concepts," Dr.-Ing Marcus Schnell justifies the close cooperation. Commercial reasons do not play a primary role in this commitment. This is about shaping the future, and about developing future structures: "We take our

ject will still be under way until the beginning of next year, XERVON could use the essential knowledge for the stringent set up of the materials management of an industrial park maintenance base.

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 learning in the process of work in cooperation with the RWTH Aachen University. New forms of in-company learning should be made an integrated part of the work and production processes. Project partners of the joint project in operation until the end of 2016 (www.projekt-elias.de) 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 want to develop new approaches and concepts which will make it possible to design the work and production systems from the outset in a manner which is conducive to learning or to change existing systems accordingly. The expected result is a holistic planning tool which makes it possible for companies from different sectors involved in services and productions to integrate the promotion of learning in their systems.

A demanding project which is as ambitious as it is necessary. The increasing dynamics and complexity of industrial production and service processes allow the learning requirements to grow continuously. Shortened innovation cycles, increasingly complex and networked industrial processes demand an even faster acquisition of knowledge and the necessary know-how. At the same time, society continues to age and the job market has fewer experts. Against this backdrop, new approaches of in-company learning appear to be very urgent in order to secure the innovative and competitive ability of

"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

the German companies even in the future. The traditional operational forms of qualification cannot achieve this.

Therefore, new design approaches are in demand to 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 competence over the entire working life and to develop new target groups for vocational training. In doing so, the inclusion of older people plays a particularly important role. This is because the diminishing foundation of skilled labour makes it necessary to also retain the performance of employees in the higher age groups.

Within the ELIAS research project, XERVON is responsible for the "Configuration and assessment of qualification measures" area. The company will transfer the concept developed within the scope of the joint project into a Group-wide use, and will further develop the personnel development concepts. The concept itself designs service process in a manner that promotes learning. Primarily it is about professionalising the tested training methods of the employees and to make them assessable according to the business objectives. Finally, for all those involved – both employees as well as the company – this is an investment that should not be underestimated and which should be well made.

"Our operative managers, specialists and experts should be further educated in an operations and practice-related and didactically meaningful way so that they can make contributions to the transfer of knowledge in a good and highly motivated manner. The further education concept must be built on a concrete yet strategically meaningful business need and the contents must be transferred and understood so that the participants do not need to process them again before they can be implemented," says Werner Hempeler, head of XERVON and BUCHEN personnel development.

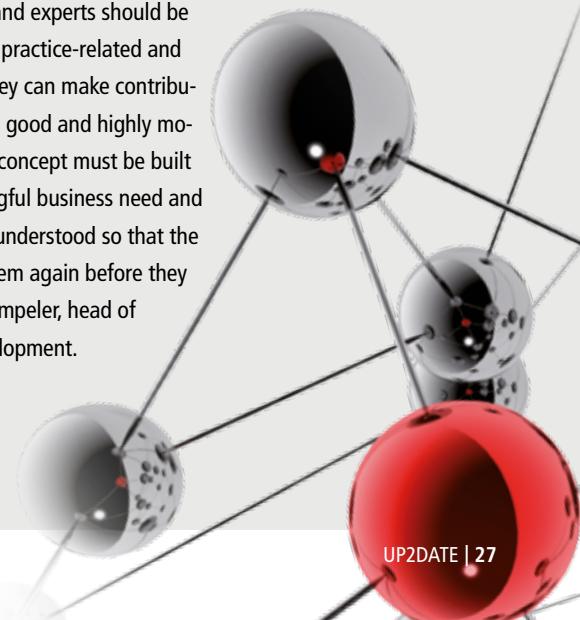
Ministerium für Wirtschaft, Energie,
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EUROPAISCHE UNION
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für regionale Entwicklung



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 SERVICE 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

XERVON and BUCHEN offer the following apprenticeships:

- Plant mechanic
- Office clerk
- Roofer
- Electronic technician
- Warehouse logistics specialist
- Specialist for pipe, canal and industry service
- 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 an industry service provider, 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.

As diverse as the companies' fields of activities are, that's how diverse our offered professions are. For example, an extremely interesting profession is the three-year dual training programme as a "specialist for pipe, canal and industry service". 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 apprentice gains 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 training staff: "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 taught in the vocational school. Technical mathematics, chemistry, English, German, sport as well as economics and social studies are taught. The external part of the vocational training programme includes the following areas: metal processing, electrical engineering, measuring technology, regulation technology, domestic water, environmental technology, vehicle technology and laboratory. 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 an 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 hands-on skills as well as 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 assemblies – 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 conclusion of their vocational training, the specialists for pipe, canal and industry service 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 support the analysis of 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 service 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 advance to director of operations or even regional director.

Once again, comprehensively certified

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

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

XERVON was audited in November and December 2013; BUCHEN at the beginning of the year: Both companies convinced the auditor teams representing the independent certification organisations of their high level of efficiency and the high level in terms of quality management, occupational safety, health and environmental protection. The successfully demanded certifications cover quality management in accordance with ISO 9001, environmental management in accordance with ISO 14001, occupational safety management OHSAS (Occupational Health and Safety Assessment System) as well as safety management 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 waste management company as well as the certification of both XERVON locations in Cologne-Merkenich and Münchmünster in accordance with IS 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 Röhrlig 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. Their day-to-day implementation has becomes a part of the company culture.

Certification without examination stress

"Our employees are sensitised for these topics from the beginning," both QSHE experts know. By now the systems are so firmly anchored and implemented that the cost of preparation for the pending audit was relatively low and stress-free. This type of audit lasting several days was carried out by auditors of the certification organisation. The audit had the character of final examinations. The independent experts do not only look at the "documentation in the file" where all processes and approaches are described in detail during a processing of orders. On site they randomly check whether the employees have familiarised themselves and implemented all guidelines into their everyday practical work.

In principle, these guidelines originate from the legal requirements and the – largely those going above and beyond the guidelines – conditions which the companies themselves prescribe. So that these requirements are maintained in a reoccurring and documentable manner in each workflow, the management systems provide the exact approach for each application in their process descriptions.

Everyone involved benefits: The customer receives a safe and high-quality service which is rendered by the qualified employees in a smooth operation; the company benefits from the efficient workflows; 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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