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LOBBE

FACTS

THE LOBBE MAGAZINE

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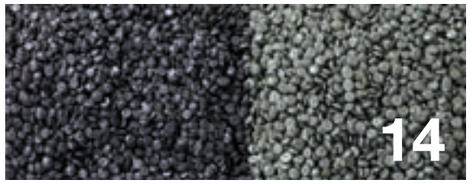

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IFAT Munich Trade Fair
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Dear Readers,

This issue of FACTS is published in anticipation of the IFAT in Munich. At the international trade fair for water, sewage, waste and raw materials management, the industry will be presenting the latest developments that make an important contribution to the recycling economy and thus to the conservation of natural resources.

The focus of this issue is on plastics. Demonised as an environmental vandal, plastics are nevertheless indispensable – whether as light switches, in smartphones or in mattresses. As one of the very few companies in Germany, Lobbe has a complete plastics cycle through its own fields of activity and shareholdings: from collection to sorting light packaging into plastic fractions and processing into type pellets, through to the production of waste containers from recycled materials. Other raw materials, such as non-ferrous metals, are also recycled in a new Lobbe processing plant. Another article is dedicated to the recycling economy of mineral waste, which makes up the largest waste stream in Germany. To ensure the recycling of mineral waste, it must be free of hazardous substances such as asbestos. You can find out how such building remediation works, including the corresponding separation technology, in the article on the asbestos removal of the Vegla House in Aachen.

An additional set of topics is dedicated to the implementation of sustainability criteria within the Lobbe Group. The Together for Sustainability Award, with its comprehensive criteria, is just as much a part of this as automation in industrial services. The implementation in a joint project, with the Spanish investment company Lagupres using the Robotized Lance Frame, is an excellent example of this. Digitalisation is another exciting topic that Lobbe is continuing to promote in various departments of the company – entirely in the interests of its customers.

We hope you enjoy reading this issue and look forward to seeing you at the Lobbe stand at IFAT.

We hope you enjoy reading this issue.

Gustav Edelhoff & Heike Vangerow

Finest raw materials

The picture shows the new processing plant in Braunsbedra.

The recycling of non-ferrous metals helps conserve important resources

Metal recycling is a long-standing tradition at Lobbe. Metals are prepared for further processing at many of the Group's sites. In Braunsbedra, Lobbe operates a dry processing plant for non-ferrous metals. The customers come from all over Europe. They mainly supply non-ferrous metals from bottom ash and slag for processing. In the plant, the metals are first separated from the mineral components, which is followed by the separation of the individual metal types. Mario Waldheim, Managing Director of Lobbe Metallrecycling GmbH, and Authorised Signatory Jörg Langer summarises the process briefly as "screening and separating". What stands behind this are complex processes and state-of-the-art equipment that identify the heavy and light metals, followed by high-quality metal fractions of aluminium, zinc, brass and copper. Secondary raw materials are not only equal to primary raw materials in terms of quality, they also make an important contribution to the environment and climate protection. In contrast to ore mining, the use of recycled metal conserves natural resources. In Germany alone, the recycling of non-ferrous metals reduces CO_2 emissions by around eight million tonnes every year.

The history of metal recycling goes back a long way. Back in ancient times, the valuable raw materials were collected, melted down and reprocessed. One of the most famous examples is probably the "Colossus of Rhodes", a huge bronze statue that is regarded as one of the seven ancient wonders of the world. The 30-metre-high statue is said to have been recycled after its collapse. Back then, as now, the main issue is scarce raw materials and resources. In the industrialised nations of Europe, a lot of metal is processed according to demand. This applies to both ferrous and non-ferrous metals. In Germany alone, around 2.5 million tonnes of non-ferrous metals were produced in 2018, which, apart from iron, includes all metals and alloys with an iron content of less than 50 percent. Whether in the automotive industry, electrical engineering or the construction sector – the areas of application for these materials could hardly be more diverse. Usually, the primary materials, i.e., ores and concentrates, are imported. This makes recycling and the use of secondary raw materials all the more important. in 2018, more than half of the raw materials for the production of non-ferrous metals in Germany were recycled metal. They are a good example of closed material life cycles. Because aluminium, copper and cobalt can basically be recycled as often as required.

This is not the only reason why the importance of metal recycling will not diminish in the future. New technologies will further advance the utilisation of the precious raw materials. To this end, the Lobbe Group continuously invests in state-of-the-art and efficient solutions. A new plant for processing non-ferrous metals was recently built at the Braunsbedra site. It significantly expands the operational portfolio of the location in Saxony-Anhalt and is a good example of a successful investment in sustainability.

Sustainability is becoming ever more important also at Lobbe

Graphics: United Nations / UNRIC

'Sustainability' is an increasingly popular term in the media. Many people understand this to mean climate neutrality, but this is not quite right. In addition to the carbon footprint, which should be as neutral as possible, there are 16 other criteria. Some of them include, for example, human health, prosperity, justice, education, gender equality, humane working conditions, economic growth, industry, innovation, terrestrial and underwater life. These selected examples show that sustainability is not just about energy consumption and CO_2 emissions.

Large corporations, international, listed groups have long been obliged to produce a sustainability report. For a year now, the EU has also been working on a catalogue of criteria for small and medium-sized enterprises. Around half of the SMEs in Germany already produce a sustainability report today – often at the customer's request. Lobbe is also working on this issue. With the extremely comprehensive audit and extremely strict criteria of Together for Sustainability (TfS), Lobbe provided initial proof of sustainability back in 2019.

Lobbe's field of activity originated as early as 1954 and was sustainable before the term emerged: Gustav Edelhoff founded his "Unternehmen für Städtereinigung" and took over the refuse collection in Iserlohn. The basic idea is the health of society. The orderly removal of refuse was intended to prevent epidemics. In the following decades, a recycling economy was developed that helps avoid polluting the environment. Extracting raw materials from waste was – depending on the state of the art – the goal from the very beginning of the entire waste management industry. Today, wood, glass, metals, cables, paper, plastics, mineral waste, compost and many other materials are recovered from waste. The maintenance of clean water is mapped out by the company's emergency management system. Other focal points of the company's orientation include the promotion of staff through further training, industry-standard salaries, women in managerial roles, and the use of renewable energies. Lobbe pursues the sustainability principle in all areas. Lobbe's service portfolio focuses on industrial services, waste disposal, waste recycling, remediation, sewage services, and emergency management.

A concrete example is the recycling and use of plastics. Lobbe operates two recyclables sorting plants and a plant for the production of secondary plastic granulates. These granulates are produced solely by physical processes and the products are characterised by the Blue Angel label. Likewise, the comprehensive cleaning and disposal tasks in the petrochemical, chemical and mining industries, as well as the remediation of contaminated sites, are always in line with the principle of sustainability. In the cleaning of large industrial plants, the dismantling of plant components, and the soil remediation of contaminated sites by means of vacuum-thermal treatment, Lobbe supports clients with customised solutions and helps optimise the life cycle of production plants and prevent or eliminate environmental damage.

Together for Sustainability audit

A total of 33 chemical companies worldwide have jointly developed a methodology to assess, audit and improve sustainability practices in the chemical industry: Together for Sustainability (TfS). The audit imposes strict requirements with regard to occupational safety, production, climate protection, health, quality, and disposal. At the end of July 2019, Lobbe completed a TfS audit for the first time with an excellent result. The Together for Sustainability audit catalogue contains internationally standardised criteria with regard to management and environmental aspects, health and safety, employee and human rights, and responsible corporate governance. They are tailored to the requirements of the chemical industry and based on international principles. The standards Lobbe has once again set for itself this year are particularly high.

Energy and water

"We already use green electricity in some projects and plan to gradually increase the amount," says Managing Director Dr. Reinhard Eisermann. For example, the FVH recycling plant uses 100 per cent electricity from renewable sources to produce regranulates. The damage management (Havariemanagement) division is permanently committed to the elimination of environmental hazards – for example, in the case of the largest environmental disaster in the region, when more than 100,000 litres of oil was spilled into the Wuppervisor dam due to the flood. All of Lobbe's disposal operations are in compliance with legal requirements, regulations and guidelines, and usually exceed these minimum requirements.

Digitalisation, service providers and health

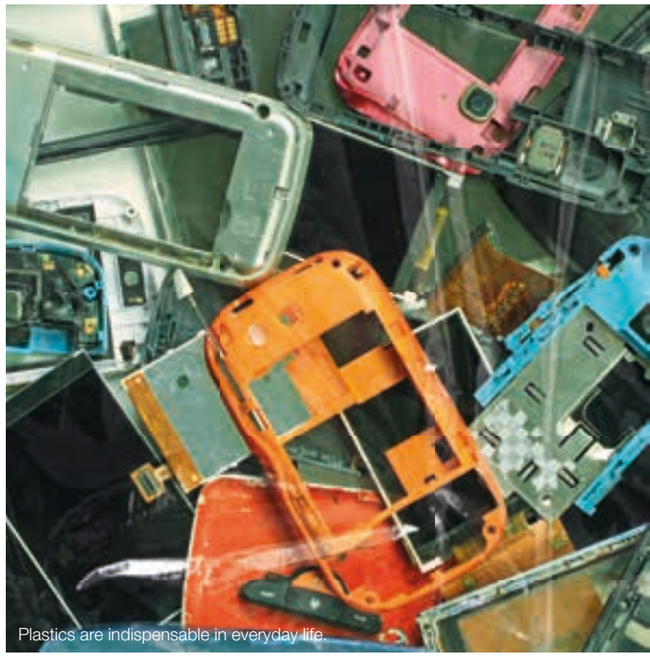
Lobbe addresses the challenges of digital transformation and ecological change in the interest of its customers, as well as of society as a whole. This naturally involves digital workplaces. Sustainability throughout the key strategies and measures set out in the UN's Sustainable Development Goals (SDGs) pertaining to environment, social affairs and responsible corporate governance, is Lobbe's top priority and an integral part of the company's self-image. When selecting new suppliers and service providers, Lobbe applies specific sustainability criteria and prefers to cooperate with companies that operate sustainably. Lobbe is committed to opposing all forms of forced and child labour. This stance is mandatory for its suppliers and service providers. Lobbe strives to prevent all work-related injuries and staff health risks. Lobbe creates a safe working environment by providing up-to-date work materials, appropriate work organisation, and technological innovations. The company offers exercise and nutrition programmes to maintain its staff's health. Innovative techniques for working outside hazardous areas are key areas of development at Lobbe. This guarantees the future viability of the Group. Innovations driven by the principle of sustainability lay the foundation for the future of coming generations.

Plastics

Miracle substance that is indispensible

The mattress, the smartphone or the light switch – nothing would work without plastic. Plastics are often indispensable for aspects of life that no one can even think of, and are behind the things that people just take for granted. The visible signs of our consumer society are the shadow sides: Threatening trash islands in the oceans, microplastics in the soil, littered landscapes... Germany is taking a stand against the careless handling of nature: by means of the orderly disposal of light-weight packaging, in that plastic bags have no longer been a free gift to retail purchases since July 2016 and, with the adoption of a packaging law since 2019, that also imposes greater obligations on the manufacturers and retailers of plastic packaging.

Plastics – at least today – cannot yet be simply replaced. But what kind of substance stands behind this term? Who invented plastics (see info box), do people in the developed world really need plastics and what does a responsible, resource-conserving approach to plastic look like?



Plastics are indispensable in everyday life.

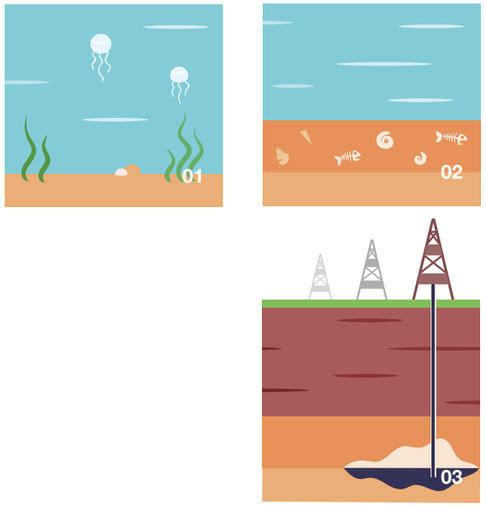
Found in almost anything

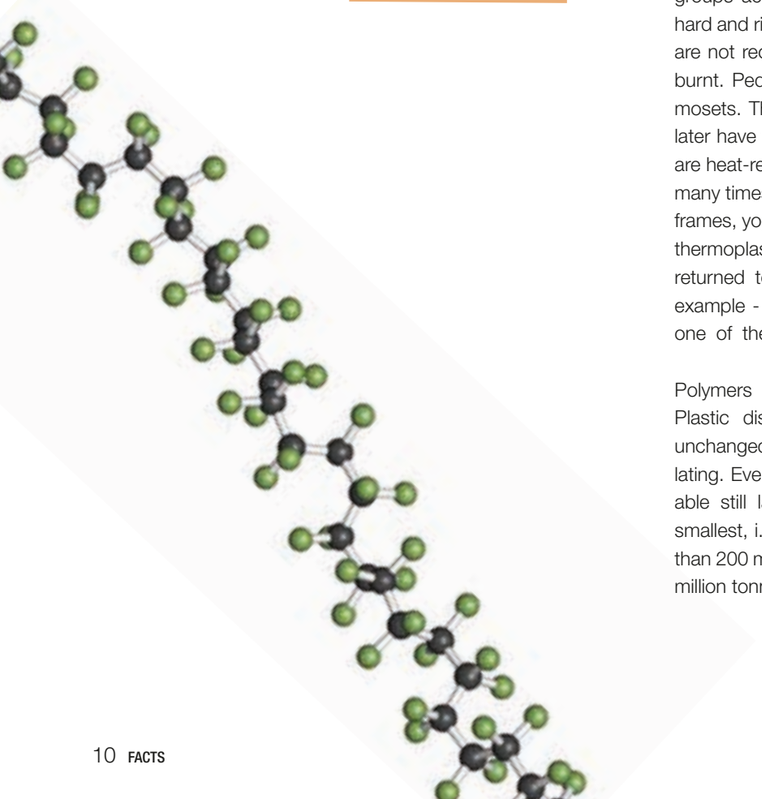
Our current standard of living would be unimaginable without plastics. Every electrical device – from lawn-mowers through to smartphones – is insulated with materials made of plastic, because unlike metal, plastics do not conduct electricity. Cars are made of very different plastics – from the dashboard to the bumper through to the seat upholstery. Floor coverings, window frames, telephones, furniture, clothing, spectacle frames, aircraft and train interiors, food packaging and even dishwashing sponges are inconceivable without plastics. Moreover, they are indispensable in the field of medical technology. The power plants that supply electricity, sewage treatment plants and drinking water production, farms and food producers would also not exist without plastics. In manufacturing, plastics have the advantage that – unlike metals, for example – they can be processed at quite low temperatures of around 250 to 300 degrees Celsius and are therefore even more energy-efficient to process. Even complicated shapes or colours and fibres are made from plastics. →

Miracle substance

Plastic is the generic term for a variety of substances, some extremely hard, others heat-resistant, others stretchable and flexible. It was invented by the Belgian Leo Hendrik Bakeland who, in 1907, was engaged in a persistent search for a miracle substance. He finally placed a piece of phenol into a formaldehyde solution, heated it in a pressure vessel to almost 200 degrees Celsius and formed the first piece of plastic, the Bakelite, which could be produced industrially in large quantities and was dimensionally stable. But about 70 years earlier, Charles Goodyear invented rubber, which is made from rubber and sulphur by means of vulcanisation. At almost the same time, Victor Regnault discovered PVC. Celluloid was synthetically produced 20 years later by Christian Friedrich Schönbein from cotton and nitric acid and, at almost the same time, Frederic Walton invented linoleum from linseed oil, siccatives and resins.

01 Millions of years ago, dead marine life sank into the sludge of shallow seas and nearby bodies of water. **02** Over the millennia, many layers of mud were deposited on top of it. **03** Exposed to high pressure and temperature, anaerobic bacteria transformed the oxygen-poor digested sludge, creating the deposits of oil and natural gas.





Natural base made from plankton

Plastic consists of crude oil, a raw material that is finite and limited. And crude oil itself has nothing to do with plastics. The earth's oil deposits were created at a time when dinosaurs still roamed the forests. The raw material of oil is plankton, which are the smallest organisms in the sea. Dead plankton sank to the bottom, buried airtight under other layers such as sand and clay. This pressure created a mixture of gaseous and liquid hydrocarbons: petroleum. In the 19th century, when artificial lighting became widespread in industrialised nations, a low-cost fuel was sought for the lamps of the time. Edwin Drake was commissioned by the Pennsylvania Rock Oil Company to search for petroleum underground – he found it and the first oil boom began. But oil was used not only to generate energy. It was also used as a fuel. For the first time, sufficient raw material was also available to produce plastics in large quantities.

From hard to flexible

All plastics consist of long-chain molecules, the polymers. Starting with one molecule – the initiator – further molecules are added. This process is called polymerisation. Depending on the treatment process, additive or process steps, plastics are divided into three groups according to their properties. Thermosets are hard and rigid. They should last as long as possible and are not recyclable. They do not melt, nor can they be burnt. Pedal boats, for example, are made from thermosets. They then pose a major challenge when they later have to be disposed of as waste. Thermoplastics are heat-resistant and can be melted down and reused many times, such as PET bottles, for example. Window frames, yoghurt pots or pipelines are usually made from thermoplastics. Elastomers that can be deformed and returned to their original shape – rubber bands, for example - cannot be melted down. They too become one of the challenges once they end up as waste.

Polymers cannot be degraded by microorganisms. Plastic disposed of in the wild can 'stay' almost unchanged for decades and is constantly accumulating. Even the types of plastic labelled as biodegradable still lack proof that they decompose into their smallest, i.e., atomic, components. Today, of the more than 200 million tonnes of plastics produced, around 26 million tonnes end up in the oceans.

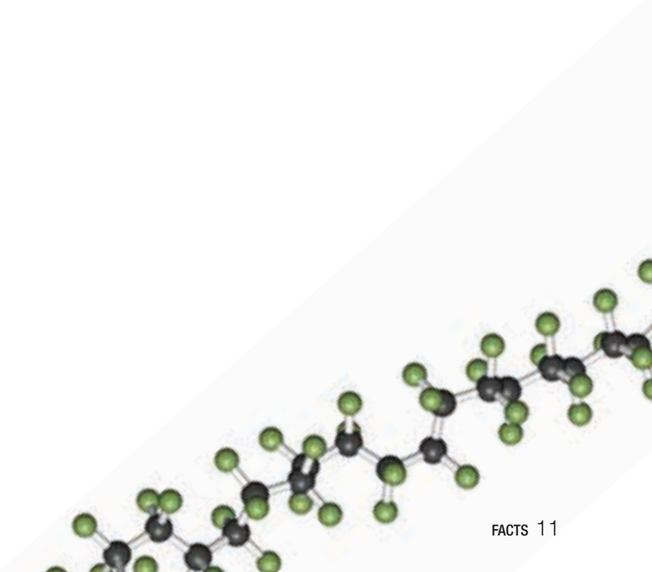
There are new methods to convert plastics back into their chemical components or to degrade them. Some studies have shown success with moths, bacteria or flour beetles. But until these possibilities can be used on a large scale, we would have to use recycling of plastics, such as fence posts, park benches or packaging materials, as well as recover energy – whereby plastics have a similarly high calorific value as hard coal.

How big are the effects when the plastic is no longer needed and becomes waste? How dramatic is the situation of floating trash islands in the sea? There are more than one floating garbage continents. The plastic waste patch in the Pacific Ocean between Hawaii and California was discovered back in 1997. The Great Pacific Garbage Patch, with an estimated area of 1.6 million square kilometres, is the largest trash island. Another equally large garbage slick is floating in the northern Atlantic. "The data on the extent and area of the trash islands in the oceans vary greatly, because the trash island is not a fixed structure. Wind and wave action can drive the plastic waste together or pull it apart," explains Dr Henning Wilts, Head of the Wuppertal Institute's Circular Economy Department.


After use, plastics can become a huge problem.

From miracle substance to problem scenario - Strategies against the garbage patches islands in the sea

Today, the Great Pacific Garbage Patch contains 79,000 tonnes of plastic waste, nearly half of which is composed of fishing nets, while the otheris mainly fishing accessories. Researchers suspect that around one fifth of the trash islands originates from the aftermath of the 2011 tsunami in Japan. The other half of the floating plastic comes from Asia, while one third of the floating plastic objects have Japanese or Chinese labelling. Indonesia, Vietnam and the Philippines are also considered to be the main sources of the Pacific Garbage Patch. In the Indian Ocean, a particularly large amount of plastic waste is found at the large river mouths of the Indus and the Ganges in India. "In South-East Asia, for example, there are numerous wild dumpsites, some legal, some illegal. Here, plastic waste is simply collected in a pile. Preferably in valleys and usually a river flows at the bottom of the valley. Wind or floods ensure that considerable parts of the plastic waste first end up in the rivers and later in the sea," reports Henning Wilts. Some studies conclude that most of the plastic found in the ocean comes from →



land-based sources. Studies assume that the garbage patch will triple by 2050. The consequences are already dramatic: Around 100,000 sea creatures die every year. But the consequences of floating garbage are more far-reaching: Coral reefs, which play a crucial role in maintaining the Earth's climate, are dying.


01

Plastic, once exposed to the elements, decomposes only slowly. It becomes brittle, disintegrates into smaller particles, while abrasion and weathering pulverise the plastic parts. Now, there is another problem: Microplastics (less than five millimetres in diameter) and nanoplastics. Particles smaller than a thousandth of a millimetre can be ingested by small marine organisms such as plankton and can thus get into the food chain. Plastic fragments can accumulate toxins on their surface. Polycyclic aromatic hydrocarbons, and even cancer-causing chemicals such as DDT and polychlorinated biphenyls, preferentially accumulate on microparticles of polyethylene, the most widely used industrial plastic. Researchers found microplastics from clothing such as fleece on beaches. Sooner or later, tiny particles of plastic are found in our food.

There are some promising approaches to fishing debris out of the oceans, such as using an oversized comb. A promising design by Boyan Slat, a 19-year-old Dutchman, consists of 50-kilometre-long, V-shaped tubes that collect 90 per cent of the floating plastic waste on the sea's surface. "The entire, gigantic problem will probably not be solved by projects of this kind alone. Most of the plastic waste is already below sea level. This means that it is almost impossible to reach the trash island below sea level. Another problem is the processing of plastic waste collected from the sea. The plastic is so contaminated and weathered that it can often only be reprocessed with an enormously high expenditure of resources in order to bring it back to life," says Henning Wilts. Experts assume that two thirds of plastic waste is stored on the seabed. In the long term, wouldn't these all be good reasons to completely do without plastics in the future? "Generally speaking, doing without plastic is not necessarily sensible and, in many areas, it is not even possible. A hospital without plastics would be unimaginable. Electrical installations in houses would not be feasible and, in the case of furniture, for example, plastic would have to be replaced by wood – a slowly renewable resource. Designing a car without plastic would mean that this car would be enormously heavy and consume much more fuel. When it comes to bioplastics, too, we have to consider first what we want to use the globally limited arable land for in the most sensible way possible," says Henning Wilts.


02


03

01 Hart or flexible – all properties can be produced. **02** Illegally disposed plastics are often also washed into the ocean by rivers. **03** Every year, 100,000 sea creatures die as a result of the garbage patches islands in the oceans.

Industrial production

The production of plastics is very complex and costly. Plastics consist not only of crude oil components, but are also composed of numerous chemical substances, and often contain sulphur or acids. Catalysts that accelerate a chemical reaction, stabilisers, fillers or binders must be added from storage tanks via pipelines. Chemical industrial parks resemble oversized chemical laboratories in which raw materials are first separated, individual substances are mixed back in, heated or cooled, volatile residues evaporated or intermediate products filtered. The processes take place in 40 or 50-metre high columns – cylindrical structures which are connected by kilometre-long pipelines. The final or intermediate products are heated or cooled with heat exchangers: gigantic tubes containing hundreds or thousands of pipes only a few centimetres thin, in which a product flows while water cools or heats this product in the interstices. Time and again, product residues stick to the heat exchangers, which then only work effectively to a limited extent. For this reason, production facilities are shut down at regular intervals and cleaned using industrial service methods – mostly with water pressure. The more automated this cleaning is, the higher the protection for the people working there. Additional filter systems, extraction systems, valves and storage tanks quickly turn a chemical industry site into an area the size of a small town. In Germany, there are 3,570 companies in the plastics industry, which employ almost 400,000 staff.

Bringing waste back to life

Through recycling to raw material

"Waste is becoming raw material" is how the NRW Environment Ministry puts it. This refers to the collection, sorting and recycling of plastic waste. Germany's and Europe's political objective includes using significantly more recyclates in the production of new plastic products. Nevertheless, this is quite difficult, as the quality of recycled plastic from waste has often been inferior in the past. But this has changed drastically. Lobbe subsidiary FVH Folienveredelung Hamburg produces type granulates from LDPE films and mixed plastics, whose products can even be distinguished with the Blue Angel seal of quality. However, the production is associated with a considerable amount of time and effort. The plastics that are recycled in the disposal chain are not only mixed, but are also polluted. And the private plastic waste from lightweight packaging (LVP) makes up only a small proportion of this anyway. By far the greater proportion of plastic waste comes from the commercial sector, such as the automotive industry.

Quality recycling

The direct recycling of plastics from LVP for new products only works to a qualitatively acceptable degree if the plastics are properly sorted according to their respective types and grades. This is guaranteed by recyclables sorting facilities. Lobbe operates two modern sorting plants for lightweight packaging in Germany at the Iserlohn site and, together with the Meinhardt company, in Gernsheim with a total annual processing capacity of almost 250,000 tonnes. A great amount of time and effort for a package that is used for only 15 minutes on average. "We are still faced with major challenges from mistakenly sorted items such as nappies, multilayer packaging whose wafer-thin layers can hardly be separated from one another, black packaging, or composite packaging of different materials that cannot be detected by the separation units," says Michael Wieczorek, Managing Director of Lobbe Entsorgung West GmbH & Co KG.

The investment costs for a state-of-the-art fleet of vehicles for waste collection, the personnel costs and the high-tech sorting facilities, as well as the subsequent cleaning and melting process, are high. FVH specialises in the recycling of contaminated and mixed plastic films, as well as mixed plastics, producing high-quality types of granulate material made of low-density polyethylene for the plastics processing industry. According to the Polyolefin Circular Economy Platform, the use of recyclates in products is to be increased to 10 million tons by 2025. With innovative processes for washing, separation and drying, FVH produces raw material qualities that go far beyond the level seen so far. Products made from these granulates are distinguished with the Blue Angel environmental label. This offers recycling options for varieties of plastic waste that have proved difficult to reuse in the past. This allows the production of high-quality buckets, tubs, grass pavers or bin liners,including waste containers that can also be made from the high-quality type granulates provided by FVH, combined with grists.

Zentek – Lobbe closes the material life cycle

Lobbe is the largest shareholder in Zentek which, together with ten other providers, maps out the dual system in Germany and is registered by the Central Office of the Federal Government. Zentek licenses packaging before it is placed on the market, collects lightweight packaging, glass, paper, cardboard, cartons (PPK) from private households, and offers services for commercial plastic waste and its disposal. Zentek is in the top third company specialising in the collection of PPK, glass and LVP across Germany. As one of only a few companies in Germany, Lobbe has a complete plastics life cycle through its own fields of activity and participations: starting with the collection and sorting of light packaging into plastic fractions, through processing into type granulates and, through cooperation with its partner SSI Schäfer, to the production of waste containers from recyclates. "We are one of the few companies in Germany that can map out such a complete material life cycle," Michael Wieczorek notes with a certain pride.

Sustainability through automation

Lobbe Industrieservice relies on the highest possible standards

The RLW is the extended arm of the human being.

Work in industrial services is often carried out in sensitive work areas. Here, the protection of employees through the highest level of occupational safety is of paramount importance. "We don't just reduce sustainability to climate protection. Other factors, such as working conditions that focus on the health and safety of employees, should also be considered here in the same way," says Adrian Bernard, Managing Director of Lobbe Industrieservice GmbH & Co KG. These pillars of sustainability have always been the most important innovation drivers for Lobbe Industrieservice. This is why the Occupational Safety Department within the Lobbe Group plays a major role.

But why is occupational safety so important for the industrial services department? In industrial services, technology is often used to remove hard, caked or stuck product residues from production facilities in order to maintain ongoing production and to support the operational safety of the equipment in the production facilities. Obviously, such technology involves increased force levels. For example, high-pressure water is often used in industrial cleaning, along with other processes. Excessive force can cut even steel or concrete. Therefore, such technology may be handled →

Lobbe uses robots for some tank cleaning projects.

only by trained personnel. This is where one of the occupational safety flanks comes in. These include technical measures such as safety gear or an emergency stop, training and education, and personal protective equipment (PPE). These measures are intended to provide the best possible protection from hazards. Lobbe was involved with other partners in drafting a DIN regulation for high water pressure workwear. This DIN is mandatory for all high water pressure work across all specialist areas.

In addition to the Together for Sustainability audit (see next page), Lobbe participates in the EcoVadis certification process. This is because the TfS approach to reviewing sustainability performance consists of two key elements: TfS assessments by EcoVadis and TfS audits by independent auditing companies. The strategic partnership between TfS and EcoVadis ensures a consistent and reliable approach to supplier evaluation. The EcoVadis process provides sustainability ratings for global supply chains against 21 CSR criteria with regard to environment, labour, human rights and ethics. More than 50,000 companies worldwide use EcoVadis to reduce risk, to drive innovation, and to promote transparency and trust between business partners. Lobbe is one of the top 25 percent of companies evaluated by EcoVadis. As the world's largest provider of corporate sustainability ratings, EcoVadis conducts its assessments based on internationally recognised sustainability standards. Certified companies must regularly demonstrate their sustainability efforts in four categories: Environment, ethics, labour and human rights, and sustainable procurement.

As a founding member of DIRV (Deutscher Industrie-Reinigungs-Verband - German Industrial Cleaning Association), Lobbe is committed to ensuring occupational safety together with other association members. The newly founded association brings together companies from the chemical industry, industrial service providers and equipment manufacturers. The topic of safety standards for high water pressure work and the use of automation in the industrial service, in which Lobbe is a leader, play a decisive role.

Own development that impresses others

In order to allow the personnel to operate as far as possible outside the hazard zone during high-pressure water work, the Robotised Lance Frame (RLF), the first ever robot-assisted method in industrial services, was developed ten years ago. This method is patented by Lobbe. "This makes cleaning a heat exchanger extremely safe, precise and comprehensible for the customer," summarises Adrian Bernard, Managing Director of Lobbe Industrie-service GmbH & Co KG.

With the Robotized Lance Frame (RLF), the propulsion unit for the high-pressure hoses drives on a three-axis frame. The working head guides three high-pressure water hoses that fit precisely into the small pipes of a heat exchanger. With up to 2,500 bar pressure, water can dissolve deposits on the inner walls at supersonic speed. The dimensions and geometry of the heat exchanger are stored in the system and the cleaning process is also recorded. This makes the cleaning precise and traceable. The biggest advantage of the system is that the working head can be positioned by remote control, thus keeping the personnel outside the hazard zone. If a larger heat exchanger were to be cleaned manually, each individual pipe would have to be flushed separately with the HP lance – a considerably more elaborate and confusing procedure, with personnel working in the hazard zone. In the meantime, the RLF has undergone several modifications, each of which is adapted and further developed to suit the customer's needs. This also includes the computer-controlled system in which the working head guides rotating lances. This system, which is also controlled by remote control, was successfully used by Lobbe for the first time at BASF's citral factory.

In the field of automation, Lobbe uses the mobile Robotized Lance Worker (RLW) for special needs. The RLW is a kind of "extended arm of the human". The robot arm can clean structures at a distance of up to three metres away. The robot itself can be repositioned several times in the course of cleaning in order to clean hard to reach components or sections. The RLW is also controlled with a remote control, which keeps the personnel outside the hazard zone.

Remediation on the largest scale possible

Another Lobbe patent is the remediation of contaminated sites in the Schwarze Pumpe area of Brandenburg. Lobbe's vacuum thermal soil cleaning system (VTRA), developed and operated by Lobbe in the Lobbe-Bauer consortium, makes an enormous contribution to source strength reduction - i.e. to reducing the input of pollutants into the soil and groundwater. In the East German era, the Schwarze Pumpe area was one of the largest industrial zones for city gas production. Over decades, pollutants accumulated in the soil there, which are now being excavated and processed. Lobbe uses a two-stage process for this. In the first →

A high degree of automation makes it possible to work outside the hazard zone.

phase, liquid substances are vaporised. In the second phase, the soil is heated again under vacuum. The vacuum lowers the boiling point of the pollutants and renders stronger heating unnecessary. In addition to saving energy, the soil retains its natural structure and can be backfilled into the original area after pollutant separation.

Lobbe Industrieservice qualifies for certified sustainability

Certification by Together for Sustainability (TfS) for the third time in a row

Duisburg. Following the invitation of a member company of the TfS initiative, Lobbe took part in a TfS audit in 2019 and achieved an excellent result. Sustainable action is an integral part of the corporate philosophy of all 33 chemical companies worldwide that have joined efforts in the TfS initiative. They work together using a methodology developed by TfS in order to assess, audit and improve sustainability practices in the chemical industry. The TfS audit sets strict requirements for occupational safety, production, climate protection, health, quality and disposal. At the end of July 2019, Lobbe completed a TfS audit with a high-performance result.

The audit results are valid for three years. A new audit is currently being carried out. Lobbe thus demonstrates its sustainable corporate governance. The audit catalogue for TfS contains internationally harmonised criteria with regard to management and environmental aspects, health and safety at work, workers' and human rights, and responsible corporate governance. These topics defined by TfS are tailored to the requirements of the chemical industry and are based on international principles.

As part of the TfS audit, an on-site inspection by the auditors will also take place at Lobbe this year: In addition to the labelling of containers and hazardous waste, escape routes and collection points are inspected and various interviews are conducted with employees. Remuneration, the provision of personal protective equipment, annual leave and break times are also included in the final assessment. "We have almost completely fulfilled the required specifications in 2019," says Willi Wenner, Lobbe Industrieservice Sales, who prepared the audit together with his colleagues from the occupational safety and the PTU department. An important, necessary, but also busy process for Lobbe. The audit is about compliance with and observance of occupational safety regulations, thorough documentation of work processes, and numerous other points. "We are very proud of the result, which many departments have contributed to. As a contractual partner of many chemical companies, we thus meet the highest quality standards. We are confident of achieving an excellent result again this year," summarises Tim Rahlenbeck, Managing Director of Lobbe Industrieservice GmbH & Co KG.

TOGETHER FOR SUSTAINABILITY

Know-how is growing continuously

Tarragona. Learning from each other and expanding the portfolio of both companies – that is the development of the companies Lagupres and Lobbe Industrieservice in recent months. At DOW's Catalan petrochemical complex, mixed teams from both companies are now ready to clean a total of 38 heat exchangers using robotic technology. The American company DOW operates one of the largest European plants in Tarragona to produce various products from crude oil, such as polyethylene for yoghurt pots, canisters or pipes. In crude oil processing, numerous heat exchangers are used to either heat or cool intermediate products to achieve the optimum reaction temperature. In the process, the product flows through bundles of pipes, some of which consist of more than 2,000 pipes of one to three centimetres in diameter and are up to ten metres long. The coolant is located outside the tube bundles.

This time, the Lobbe/Lagupres' cleaning work is focused on the heat exchangers of the hydrocracker and the octane plant. In a process known as hydrocracking, the long-chain molecules of crude oil are broken down into smaller molecules by adding hydrogen, which can then be further processed. The production of octane is essential for the production of petrol – for example, Super and Super Plus have different octane numbers for the trouble-free operation of a car engine.

This year's shutdown of the DOW refinery in Tarragona, which runs over many weeks, has seen several thousand additional workers from outside companies working on the DOW site. These included the teams from Lobbe and Lagupres with the job of automated heat exchanger cleaning using Robotised Lance Frame (RLF). This method is patented by Lobbe. Here, a frame is mounted on the mirror of the heat exchanger, along whose axes the working head moves. This includes up to three maximum-pressure water hoses that can be controlled by remote control and automatically clean up to 3,000 pipes. Each high water pressure hose has its own propulsion unit. The water-protected calculator shows the geometry of the heat exchanger and the respective position of the individual tube bundles. Each position is controlled by remote control. The specialist personnel is outside the hazard zone. The process can be traced at any time by digital recording of the cleaning process,

Lobbe successfully completed the first joint project using the Life Support System in spring with the support of Lagupres. Lobbe Industrieservice teams now supported the colleagues from Lagupres in their first use of the RLF. This bundled know-how permitted the performance of all cleaning work within the specified timeline to the fullest satisfaction of the customer. "This means that the two companies are growing much closer together and offer a considerably broader portfolio for industrial services," summarises Tim Rahlenbeck, Managing Director of Lobbe Industrieservice.

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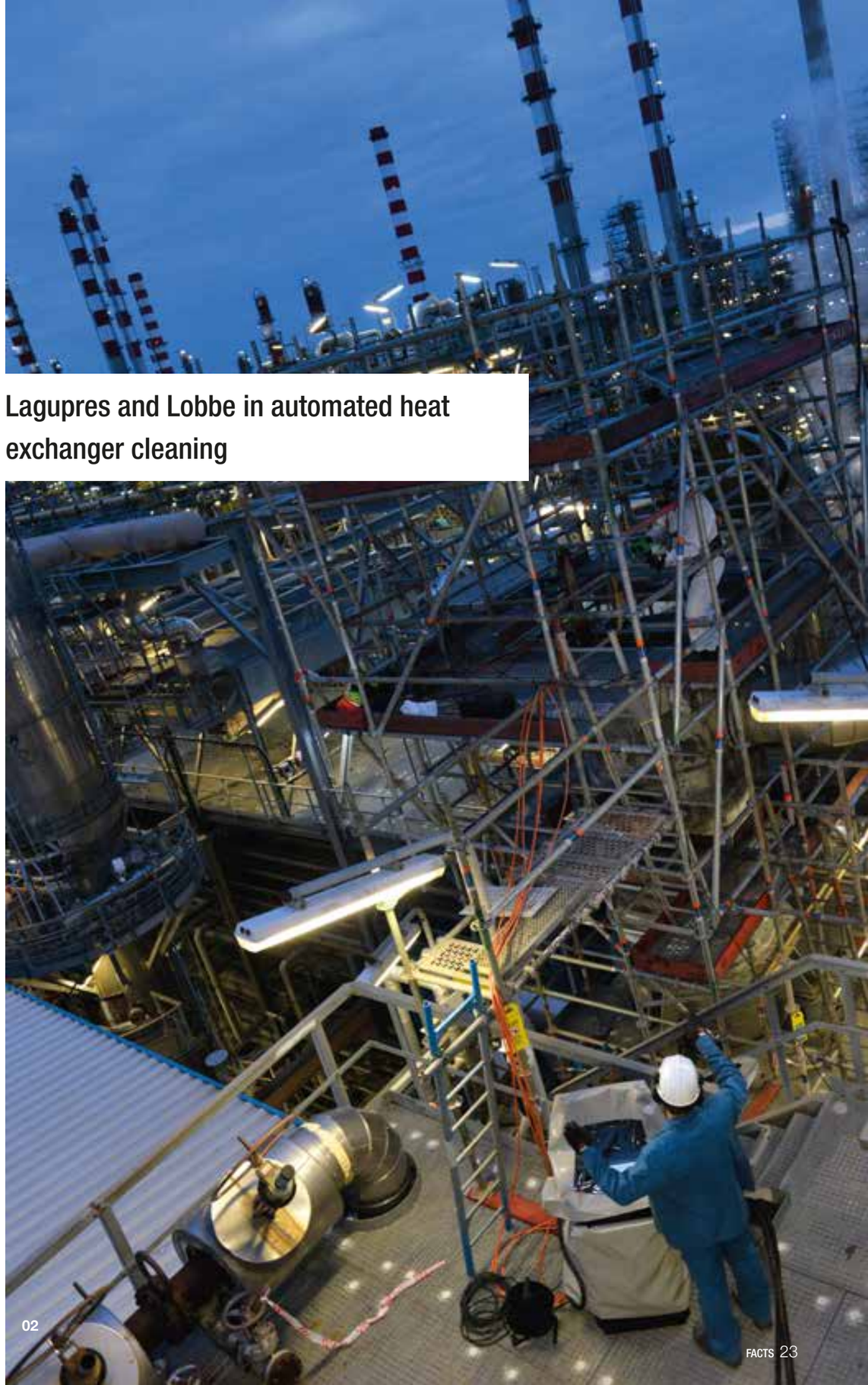
01 Both companies grow together and benefit from each other's know-how. **02** The computer-assisted method keeps personnel outside the hazard zone.


Lagupres and Lobbe in automated heat exchanger cleaning
02

Tablets are part of the new telematics in vehicles.

Digital transformation

Optimised processes and transparent service →

Digital transformation

01

Iserlohn. Digitalisation is playing an increasingly important role in almost all areas of life. More and more aspects of our professional and private lives are now digitally designed. For an efficient and modern company such as Lobbe, the path from the digital present to an even more digitalised future is now inevitable due to productivity gains and increased customer needs. At the same time, automation and digitalisation ensure greater sustainability – entirely in the spirit of the recycling economy.

Digital solutions are and always have been a top priority at Lobbe. In the future, manual data entry will no longer be necessary in order to avoid transmission errors and to simplify internal processes, as well as the communication with customers. Many internal work processes can be optimised, from employee time recording to assignment documentation. Instead of using digital cameras and sending emails, site managers and foremen involved in the Kluge remediation projects now communicate via app. The digital construction file is accessible to all employees of Kluge Sanierung and thus also brings more security and transparency in the communication with clients and service providers. Digitalisation is transformative. It changes the way companies interact with their customers and provides much more transparency and traceability of operations.

In addition to digitalisation projects in the area of sales, a customer portal for a smooth and fast communication, as well as easy commissioning 24/7, Lobbe will rely on a digital document flow from the submission of the offer through to the final invoice. For this purpose, all vehicles in the Waste Management Business Segment will be fitted with a new telematics solution. This means that performance certificates will be carried digitally via tablets and the paperless cab will finally become a reality. In the future, customers will also benefit from this introduction, as they will receive all receipts, such as service certificates, invoices or accompanying documents electronically.

Lobbe also offers digital solutions to municipal clients. This involves digital communication between the waste management company and the client, as well as the optimisation of work processes. Both sides use an online communication portal for this purpose. All communication is handled via the portal. All orders and the processing progress can be tracked transparently. This involves, for example, registering the collection of bulky waste or electrical appliances or container management. For some time now, Lobbe has been offering German citizens a free app for Android and iOS in which the municipal collection dates are stored. With the Lobbe app on their mobile phones, users receive the most important waste disposal services. The smartphone app reminds citizens ahead of time the collection of residual/organic waste or waste paper. For Smart Home users, the collection dates can be used in iCal format for the private Outlook calendar or Smart Home applications such as Alexa or Google Home.

In industrial cleaning at Lobbe, automation by means of computer-assisted processes ensures additional occupational safety when, for example, residues remain in production facilities that have to be removed from pipelines, heat exchangers or tanks. Computer-assisted and automated cleaning is an innovative step in this process. The Robotised Lance Frame used here encompasses all three axes – width, height, depth – of a heat exchanger. The frame accommodates a movable working head controlled by remote control and fitted with special nozzles. Teaching of the working head must be carried out only once per heat exchanger. Then, the data for the next cleaning interval can be called up immediately. If the personnel brings the working head to the starting point of the next cleaning position with the remote control, the computer automatically and precisely controls the next selected target point. This increases the safety of the employees, and the cleaning process can be reproduced as often as required while maintaining the specified quality parameters.

Lobbe will continue to promote digitalisation in all areas of the company, investing continuously in state-of-the-art technology and solutions for both internal operations and, in particular, for our customers.

02

01 Never miss a collection again with the Lobbe app and know when and which bin is collected on which day. **02** Digital solution that neatly fits in your pocket – the Lobbe app **03** Digital monitoring of the VTRA in a 24/7 mode.


03

Not only the obvious things

Recycling economy and asbestos-containing construction waste

Construction and demolition waste is the largest waste amount in Germany at 215 million tonnes per year. Around 58 million tonnes per year of this is mineral demolition waste, such as concrete or masonry. The political objective is to recycle these large volume streams in the best possible way as part of the recycling economy. This reduces the consumption of landscape and resources through landfills, sand pits, quarries and building material production to the minimum.

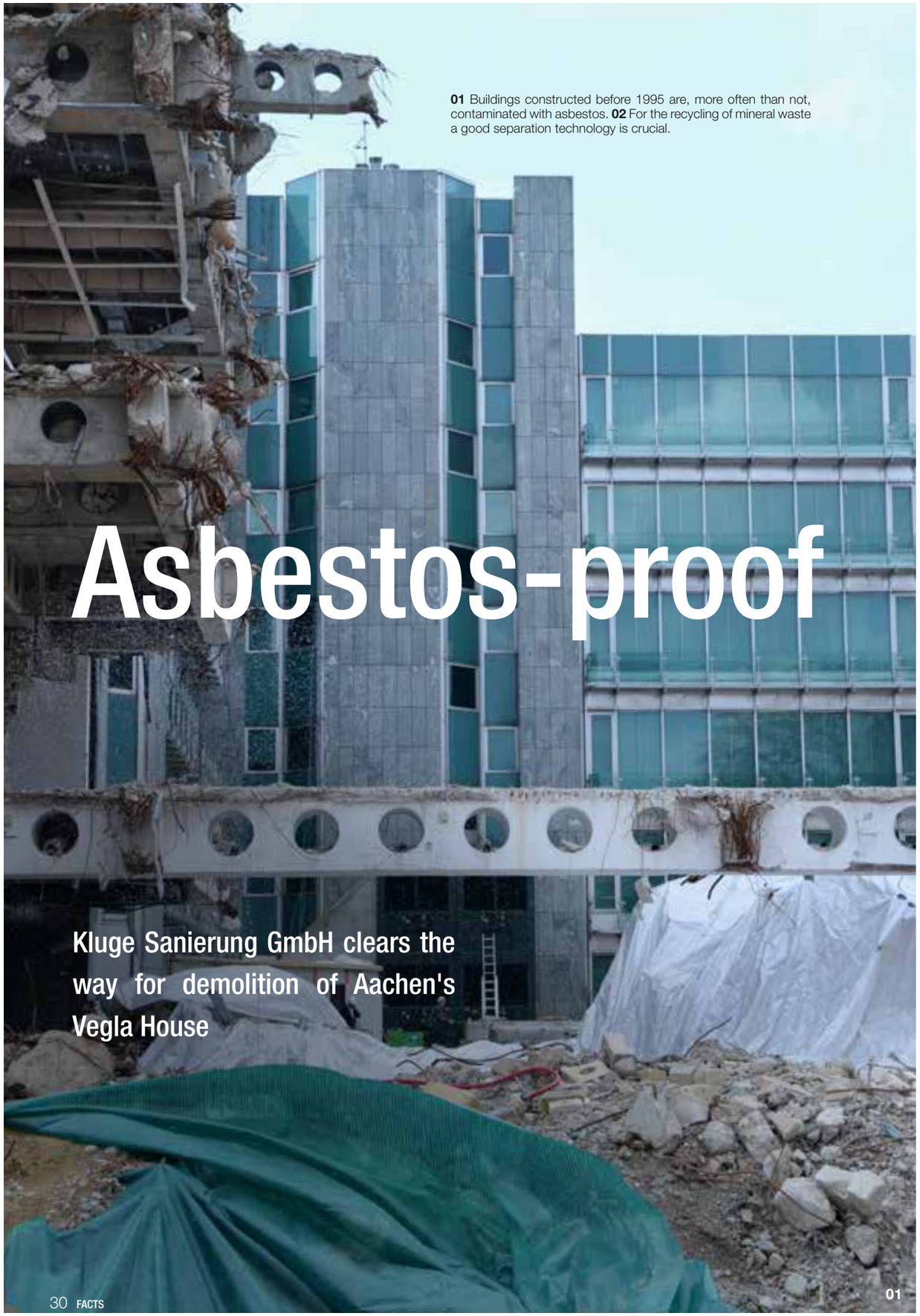
To ensure the necessary acceptance of recycled products by the user, the processed raw materials must be free of hazardous substances such as asbestos. "We assume that about 50 per cent of all buildings constructed before 1995 are contaminated with asbestos," says Christoph Hohlweck, Managing Director of Kluge Sanierung GmbH. These asbestos-containing building materials, referred to in technical jargon as asbestos uses, are, for example, corrugated asbestos roofs, sprayed asbestos on steel girders or fire dampers containing asbestos in ventilation systems. In addition to these comparatively easily recognisable asbestos products, asbestos is found in a wide variety of other components without being able to be detected as such. Filling compounds, tile adhesives, plasters, as well as wall thicknesses and spacers in reinforced concrete construction, are representative of a large number of materials containing asbestos that can be detected only by means of systematic examination, sampling and laboratory analysis.

"In order for the recycling economy to find a way with mineral construction waste, structures built before 1995 must be systematically examined for asbestos contamination, and the existing asbestos uses must be removed and disposed of in a proper manner before demolition," Christoph Hohlweck says.

Kluge Sanierung GmbH specialises in safely removing hazardous substances from structural and technical facilities. Together with partners from industry and universities, Kluge is involved in the RECBest research project funded by the Federal Ministry of Education and Research (BMBF). Its research objective is to develop safe methods for the accurate detection of pollutants in existing buildings, their remediation and demolition, and their recycling into a high-quality recycled material.

Good separation technology is crucial, since as few raw materials as possible are to be landfilled as waste. During the renovation of the Vegla House in Aachen, Kluge showed in an exemplary way how the valuable recycling raw material concrete can be recovered through the targeted deconstruction of asbestos uses before the actual demolition. At the former Vegla House in Aachen, asbestos cement pipes cast in as lost formwork stood in the way of recycling the concrete. By using special ultra-high pressure water cutting techniques, the asbestos pipes were removed in a clean and almost dust-free manner, thus ensuring the recycling of large reinforced concrete demolition masses. Therefore, this project shows that with innovative ultra-high-pressure water processes, such a separation is quite feasible.

"We assume that about 50 per cent of all buildings constructed before 1995 are contaminated with asbestos."



01 Buildings constructed before 1995 are, more often than not, contaminated with asbestos. **02** For the recycling of mineral waste a good separation technology is crucial.

Asbestos-proof

Kluge Sanierung GmbH clears the way for demolition of Aachen's Vegla House

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02

Aachen. It was called "The Aquarium": The Vegla House on Viktoriaallee in Aachen was an architectural showpiece in the 1970s. The building was due to be demolished at the end of 2018 to make way for a residential and commercial complex. However, in December 2018, the demolition work had to be interrupted because masses of asbestos pipes were found in the concrete beams of the building. The carcinogenic asbestos is dangerous when it gets into the lungs as dust. From mid-March 2019 onwards, Kluge Sanierung GmbH implemented professional remediation and removed and disposed of the approximately 3,500 pipes – a total of around 180 tonnes of asbestos. As part of this project, Kluge has developed a new ultra-high water pressure method (HD process).

The asbestos pipes were cast in the concrete and had to be cut up for dismantling. To ensure that as little as possible asbestos dust is released during dismantling, Kluge has developed a new process. Here, the ends of the asbestos pipes cast in the concrete are first closed with two lids and then cut into segments from the inside using an ultra-high water pressure jet. The asbestos particles loosened during cutting are extracted together with the water. The water is then filtered and the resulting solids are disposed of as asbestos waste. Once the asbestos pipe has been cut into several segments, these can then be removed from the concrete without any further work steps and also disposed of as asbestos waste. The encapsulated HD process now developed by Kluge Sanierung for cutting asbestos pipes has the great advantage that the asbestos pipes can be cut with very little dust and then released from the concrete support. In the future, this procedure should enable the safe dismantling of comparably used asbestos pipes without having to take extensive protective measures.

Where do the asbestos pipes in the former Vegla House come from? The building consists of a concrete skeleton with a glass façade. Almost all of the building's concrete girders have a fixed grid of mostly 50-centimetre through-holes. When casting the concrete beams, the asbestos pipes that were widely used at the time were inserted into the formwork, thus creating the perforations in the concrete. The asbestos pipes remained as so-called lost formwork in the hardened concrete. The Vegla House shows impressively: Asbestos has been banned in our country since 1993, but almost all buildings constructed up to that time have asbestos "on board", and in a variety of uses.

As is typical for a building of this age, there were several other asbestos uses at the former Vegla House besides the asbestos pipes. These were dismantled, packed and disposed of together with the pipes while taking extensive safety precautions. Only after this remediation could the demolition be carried out.

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