

The REMONDIS Group magazine

# REMONDIS AKTUELL

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AKTUELL

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## An eye on the world

WHY IT IS EVEN MORE IMPORTANT TO DRIVE  
FORWARD THE CIRCULAR ECONOMY IN TIMES  
OF RAW MATERIAL SHORTAGES

### Providing help after the floods

Colleagues support the regions devastated  
by the floods

### Wirtschaftsbetriebe Oberhausen marks 25 years

Public private partnership delivers  
convincing results

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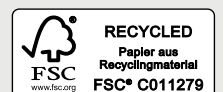
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Images: Adobe Stock: Zffoto (Cover); Adobe Stock: DigitalGenetics (p. 4/5); Adobe Stock: SZ-Designs (p. 4/5); Adobe Stock: Kerim (p. 6); Adobe Stock: SasinParaksa (p. 6); Adobe Stock: by-studio (p. 6); Adobe Stock: imaginando (p. 9); Adobe Stock: levgen Skrypko (p. 9); Adobe Stock: Norbert (p. 10/11); Adobe Stock: Blickfang (p. 16); Diebold Nixdorf Technology GmbH (p.17); Adobe Stock: studioworkstock (p. 29); Adobe Stock: akf (p. 30); TinyDesignr (p. 31); Adobe Stock: danielkoke (p. 38/39); Adobe Stock: sidorovstock (p. 40/41); Adobe Stock: Rolf Ge. (p. 42/43); Adobe Stock: Michael Evans (p. 44/45); Adobe Stock: konstruktor1980 (p. 46/47); Uwe Epping (p. 48); iStock: koya79 (p. 52)

Press officers: Michael Schneider, Anna Ephan, Lena Langenkämper // Layout: www.a-14.de // Print: LUC, Selm



Dear Readers!

Many people will be looking at their calendar with a feeling of disbelief that this turbulent year is already coming to a close. 2021 has been a year that will remain in our memories for a long time to come. Here in Germany, the devastating floods that hit the state of Rhineland-Palatinate and parts of North Rhine-Westphalia were a stark reminder that we finally have to up our efforts and take some serious steps to curb climate change. And while the people living in the affected regions are still clearing up the rubble – also thanks to the rapid help from the circular economy – and working to rebuild their lives, the world met in Glasgow to argue about whether or not to phase out coal. At the same time, covid came back again with a vengeance this autumn. Hesitant politicians and organisational failure came up against a waning vaccine immunity and vaccine scepticism among a minority of the population, who seem determined to ignore scientific facts. And, this year was an election year – the end of the Chancellor Merkel era – and a perfect storm had been brewing in a political vacuum as the slow-moving coalition talks meant the new Government could not take up the reins. It is high time that the right course is set – in politics, in the economy and in society.

Faced with such difficult situations, it is then almost a minor miracle that our family business has – together with and thanks to our partners and customers – had an exceptionally good year. Much of this can be put down to the global economy restarting in the spring after the strict covid measures were provisionally lifted. The flipside of unrestrained production activities and a highly charged global trade, though, soon became evident: a general shortage of raw materials. Anyone trying to build a house and get hold of timber or plastic pipes in 2021 certainly know all about this problem. As the year drew to an end, it was even difficult to get hold of recycling sacks because, being in such high demand, there is a shortage of recycled plastic pellets.



Ludger Rethmann, REMONDIS Board Chairman

Which brings us to the subjects that unite the essence of the two previous paragraphs: climate action and resource conservation. The wide range of services that our company delivers plays a major role in helping to solve the problems mentioned above. By recycling materials, producing renewable energy and offering sustainable services, we are easing both problems at the same time. Each tonne of raw material recycled by our company not only conserves virgin resources but also cuts large volumes of carbon emissions. Along the way, we are also gradually switching over to climate-neutral logistics. Inspired, by the way, as well by our sister company Transdev, which already deploys whole fleets of electric buses in many cities around the world – a role model and an incentive for us to do even more.

And so there is some good news as well at the end of this eventful year – and we would like to thank you all for the great collaboration work that made this possible. May we also take this opportunity to wish you a happy Christmas and all the very best for the coming year.

Yours

A handwritten signature in black ink that reads "Ludger Rethmann". The signature is written in a cursive, flowing style.

Ludger Rethmann

# Wish list: paper, semiconductors, steel ...

WHY IT IS EVEN MORE IMPORTANT TO DRIVE FORWARD THE CIRCULAR ECONOMY  
IN TIMES OF RAW MATERIAL SHORTAGES





According to PwC, the ongoing shortage of semiconductors alone will mean that eleven million fewer cars will be sold around the world this year.

There will be a sigh of relief just before Christmas when this issue of REMONDIS AKTUELL has been printed. It became clear during an editorial meeting at the beginning of October that the paper needed for the magazine should be ordered well in advance. The reason: a general shortage of raw materials. Paper is just one example here. Steel, aluminium, copper, plastics and semiconductors are also hard to get hold of at the moment. According to a survey carried out by the ifo Institute, 77.4% of German businesses said they were having difficulties procuring the primary products and raw materials they needed in September. Consumers may feel the consequences of this around Christmas time – be it a delay in supplies or higher prices. If we wish to reduce the dependency of local industry on imports and tackle climate change, then there really is only one solution: to use more recycled raw materials!

The covid pandemic has changed the way consumers behave. They are, for example, more likely to order the goods they need off the internet from the comfort of their armchair rather than go to the shops as they would have done in the past. And they have more money in the bank as the lockdown has meant they have been unable to go on holiday – money for a new car, for example. Wood for furniture, packaging material for online sales, and microchips, steel and aluminium for new cars. Raw materials that are normally in (almost) limitless supply. At the moment, however, raw material suppliers are finding it difficult to keep up with demand.

#### **Printers are running out of paper**

As is the case with paper, as mentioned above. People who forget to take their own bags with them when they go shopping are often in for a nasty surprise. Many stores no longer have paper bags. The publishing industry is getting increasingly worried as well. Printers are finding themselves unable to print the number of copies they need as there is a lack of paper. According to the ifo survey in September, 79% are experiencing supply problems. Many paper manufacturers have been gradually cutting down on the amount of graphic paper they produce so that they can make more packaging material to keep up with the growing demand from online retailers. Graphic paper is needed for printing and copying – and for printing books. What's more, the paper mills are themselves having difficulties accessing the raw materials they need: cellulose is essential for manufacturing paper and this has to be imported from Asia and South America. Supply chain disruptions, however, have meant that product deliveries have been delayed. The result: the price of cellulose has almost doubled within just a few months.



# 77.4%

of German businesses said they were having difficulties procuring the primary products and raw materials they needed in September

And then, on top of this, there is less old paper available on the market. Companies are printing fewer brochures and advertising materials. Fewer leaflets have been printed as hardly any events have been taking place. Newspapers are getting thinner. The volumes of old paper being generated have dropped, something that is particularly noticeable in the commercial sector. This, in turn, is having an impact on prices. Fastmarkets Foex recently reported that the price for old paper had increased by over 70% since the beginning of the year.

### The car industry is being forced to slow down


The situation is just as serious in other industries: companies wishing to upgrade their fleet of vehicles need to be very patient. According to the ifo survey in September, practically all of the firms operating in the automobile industry (97%) were finding it difficult to get hold of primary products and raw materials. In some cases, they have had to shut down their production lines. Opel, for example, has closed its factory in Eisenach and will not be reopening it until the beginning of next year at the earliest. One of the challenges they face is procuring steel. Faced with the pandemic last year, many sectors like the automobile industry chose to cut back their production – something that led to a dramatic fall in the demand for steel. The response of the steelworks was to cut back their production as well and reduce their capacities. This has now led to supply bottlenecks and longer waiting times.

The automobile sector, however, is not just being affected by changing demand. The move towards electromobility and ever-smarter vehicle technology is also proving to be a challenge. Besides requiring conventional materials, they also need an ever-growing volume of new raw materials. The keyword here: microchips. According to PwC, the ongoing shortage of semiconductors alone will mean that eleven million fewer cars will be sold around the world this year.

And the next problem is just around the corner: WVMetalle (metals association) recently warned that there were supply bottlenecks for magnesium – a raw material needed to make aluminium. This could become a major issue: no other industry in Germany is as dependent on aluminium as the automotive sector. It consumes almost 50% of all the aluminium used in Germany. This material is found in a whole number of vehicle components and will become increasingly important as the automotive lightweighting discussions continue. A supply shortage could have a massive impact on car production.

### A crisis impacting all sectors

Practically every sector has been affected by the raw material crisis. This was highlighted in a survey carried out by the German Association of Chambers of Industry and Commerce (DIHK) in August 2021: of the approx. 3,000 German companies located in Germany and abroad that took part, 83% (across all industries) stated that they were facing rising prices and/or problems procuring raw materials, primary products and goods. Just 20% were expecting the situation to have eased by the end of the year. 53% believe things will not begin to improve until 2022.



It is reckless for countries that have so few natural resources of their own, such as Germany, to be completely dependent on imported raw materials. We must begin to think in a circular fashion.



substitute

scrap iron	7,316,000t	10,242,000t	iron ore
old paper	1,675,000t	4,506,000t	wood
e-waste	145,000t	4,868,000t	copper ore
recycled aggregate	2,900,000t	2,900,000t	naturally sourced aggregate
old glass	885,000t	1,062,000t	minerals
gypsum (from flue gases)	262,200t	262,200t	flue gas emissions

The table shows how REMONDIS' recycling activities conserve natural raw materials (2016)

And yet, this should not come as a surprise as we have known for a long while now that the world's supply of raw materials is finite. The UN has forecast that up to 10 billion people could be living on our planet in 2050. At the same time, the global middle class is growing which, in turn, is leading to an exponential growth in the pro capita consumption of raw materials. Humanity, though, is already taking more than its fair share. Earth Overshoot Day – the day when the demand for natural resources in a given year exceeds what Earth can regenerate in that year – was on 29 July this year. Humans are already consuming the resources of 1.7 planet Earths. A figure that continues to rise.

Despite these numbers, the Circularity Gap Report reveals that the global economy extracts more than 100 billion tonnes of virgin raw materials from the ground every year using energy-intensive processes. These raw materials are processed, consumed and disposed of or incinerated – creating a linear system. This system, however, becomes a stumbling block when there are global shortages. Companies must accept rising prices if they wish to procure the raw materials they urgently need. Industries that shoulder a nation's prosperity find themselves on the brink of collapse.

**Thinking circular**

It is reckless for countries that have so few natural resources of their own, such as Germany, to be completely dependent on imported raw materials. We must begin to think in a circular fashion. According to BCG, a firm of consultants, if Germany were to invest between 50 and 60 billion euros it could reach a total circularity of up to 75% for many different materials by 2040. A lot of money but a move that would certainly be effective. Transitioning to a circular economy can underpin the competitive position of companies and create new jobs. Recycled raw materials, therefore, must no longer be seen as the number two choice – either from a technical or from a business point of view.

And when it comes to tackling climate change, they are a better choice than virgin raw materials. According to statistics published by the Ellen MacArthur Foundation, the circular economy has the potential to cut CO<sub>2</sub> consumption by 45%. Steps have already been taken in a variety of material flows to ensure that the circular economy has a long-term positive impact on global warming. REMONDIS already produces over 30 million tonnes of recyclates that are then supplied to industry as new raw materials. With its diverse innovations and patents, it is helping to safeguard raw materials and, consequently, to curb climate change.

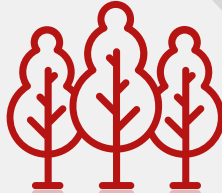


45%

Raw material security and climate action go hand in hand: the circular economy has the potential to cut CO<sub>2</sub> consumption by 45%

REMONDIS is leading by example here: every year, it collects and processes 2.2 million tonnes of old paper so that around

**8 million** tonnes  
of forest wood no longer  
need to be cut down



#### Paper recycling – an alternative to deforestation

Across the world, forests play a vital role producing oxygen and absorbing greenhouse gases. Which is why, over the long term, it is not sustainable for every one in five trees felled to be used to produce virgin fibre paper. REMONDIS is leading by example here: every year, it collects and processes 2.2 million tonnes of old paper so that around eight million tonnes of forest wood no longer need to be cut down.

In its eleven sorting plants across Germany, the company first separates the different kinds of old paper according to type before packing them up. Sorting them is particularly important, especially when you consider the transition mentioned earlier – i.e. the move from graphic paper to packaging material. The increasing volumes of mixed packaging has meant that the composition of the recyclable materials has changed and this is creating new challenges for recyclers. REMONDIS Trade and Sales has responded to these challenges by investing in even better quality management processes. These should ensure that the quality of the secondary raw materials that it sends to its customers in the paper industry remains at a consistently high level.



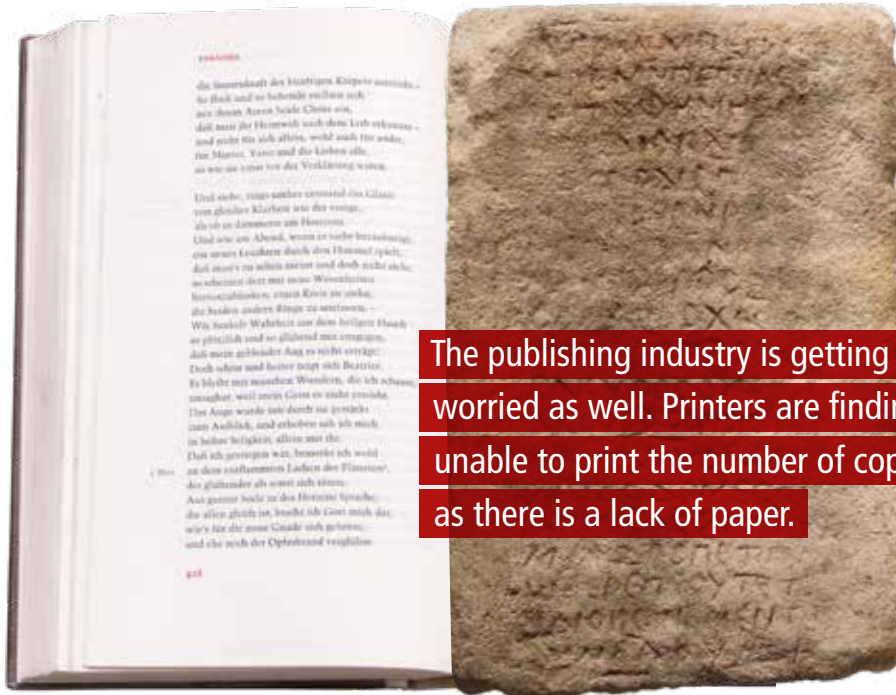
Changing the way steel is produced could also significantly cut carbon emissions.

#### Green steel from high quality scrap steel

Changing the way steel is produced – one of the most energy-intensive industries around – could also significantly cut carbon emissions. Here in Germany, discussions are focusing, for the most part, on green steel, i.e. steel that is produced with preferably no CO<sub>2</sub> emitted either during the smelting or the processing stages. To be able to achieve this, companies must stop using coal and coke as their source of energy and as a reducing agent in their smelting processes. The idea here is to use 'green hydrogen' as a climate-neutral substitute. The problem: where to get hold of such large volumes of green hydrogen and who should pay for it?

And yet green steel has been around for ages – namely, steel produced from high quality scrap steel. This material is sourced from discarded products that contain a large amount of steel, such as household appliances and cars. There is a huge potential here as this metal can be fully recycled. Scrap steel is already being used for cooling in production processes. Thanks to this system, the raw materials can be recovered and reused. At the moment, however, the extent to which steel scrap can be used to produce high quality primary steel is limited – in particular because of its heterogeneous composition.

In response to this situation, TSR Recycling is currently developing a new procedure that aims to increase the amount of recycled material used in steel production processes. Consumer scrap is to be used here to make a high quality product, whose properties can be precisely determined. The challenge faced by the company is to find a way to separate and remove any unwanted materials from the iron so that the product can be certified as a raw material suitable for smelting furnaces.



The publishing industry is getting increasingly worried as well. Printers are finding themselves unable to print the number of copies they need as there is a lack of paper.

This system is to be tested and optimised in a joint project so the material can be used in thyssenkrupp Steel's furnaces. Using this product will lead to a reduced use of pulverised coal injection and a lower consumption of coke in both the furnace and the converter: CO<sub>2</sub> will be cut by around 1 tonne every time a tonne of recycled material is used in the furnace. And in the converter, one tonne of recycled material used will lead to CO<sub>2</sub> savings of 1.7 tonnes. Numbers that underline how this strong collaboration is further strengthening the circular economy.

### Increasing recycling rates

REMONDIS AKTUELL has published a special issue dedicated entirely to recycled raw materials. To find out more about this subject and the individual material flows, simply scan the QR code and read the online version.

What is clear is that recycling rates must be increased for all materials. The world's population is increasing and the planet's natural resources are decreasing – the maths is simple. There is one thing though that is often forgotten: recycling is not simply something to be considered at the end of a process. Ultimately, a product can only be fully recycled if the materials used to make it can be separated from each other when it reaches the end of its useful life. If all raw materials are to become circular in the future then regulations must be introduced regarding the ecodesign of products and packaging, i.e. 'Design for Recycling'.

Moreover, the path towards creating a circular economy also presupposes that the recycled raw materials will be reused in production processes. This will only happen if governments introduce minimum content mandates. Currently, recycled raw materials make up around 14% of the raw materials consumed by German industry. Doubling this share to 30% would cut carbon emissions by an additional 60 million tonnes. A price should also be charged on the carbon emissions emitted along the supply chain from the raw product to the final product. It must be worth a company's while to use carbon-saving recycled raw materials.

There is another item high up on our wish list besides paper, semiconductors, steel and other raw materials: that we all – producers, politicians and consumers – work together to create a successful circular economy. An ambitious appeal but one that is extremely urgent in light of the raw material crisis.



The special issue of REMONDIS AKTUELL dedicated to recycled raw materials



# Setting a new course

THE COALITION AGREEMENT DRAWN UP BETWEEN GERMANY'S FUTURE GOVERNMENT PARTIES FINALLY CONTAINS THE CIRCULAR ECONOMY'S LONG-STANDING DEMANDS

For many years now, REMONDIS and other companies operating in the circular economy have been calling for there to be a move away from the traditional linear economies towards genuine circularity – for both products and raw materials. Very little has changed during this time. For too long, outdated production standards, analogue processes, composite materials and comforts we have grown too fond of have been part of our supposed modern life. The warnings that this behaviour was having an increasingly negative impact on the environment and climate and putting the economic foundations of future generations at risk were being listened to but rarely did these warnings lead to a true change of direction. Until now that is. Germany will have a new Government at the end of the year – a coalition between the Social Democrats, Greens and Liberal Democrats. For the first time ever, their coalition agreement contains practically all of the circular economy's key demands.

**Would you like to have a taste of what is to come? The text agreed to by all three parties contains the following passages:**

"We shall support the circular economy as an effective means to curb climate change and protect resources, as an opportunity for sustainable economic growth and jobs. It is our aim to reduce the consumption of virgin raw materials and to close material life cycles. To achieve this, we shall adapt the existing legislative framework, define unambiguous targets and review waste management laws.

We shall unite the existing raw material policies into one "National Circular Economy strategy". Using this as our basis, we shall then campaign for there to be uniform standards across the EU. Ambitious and uniform product requirements must be set for the whole of Europe in dialogue with manufacturers. Products must be durable, reusable, recyclable and, preferably, repairable.

We shall strengthen the extended producer responsibility at European level. We shall introduce digital product passports,

support companies to implement this and observe the principle of data minimisation. We shall increase the avoidance of waste by having statutory targets and environmentally beneficial take-back and deposit return schemes for single use and multiple use products as well as by having industry agreements. In so doing, we shall support innovative, sustainable ideas such as shared use.

We shall establish an incentive scheme so that certain electronic devices and dangerous lithium-ion batteries are disposed of in an environmentally sound way and handed over to the circular economy. We shall reduce the destruction of returned goods. Using a statutory fund model, we shall reward resource-friendly and recycling-friendly packaging design and the use of recyclates. We shall introduce a recycling label. New high quality material life cycles shall be created by speeding up the development of recyclate quality standards. Quality-assured waste products are to be removed from waste law and be given product status. We shall set higher recycling rates and a product-specific minimum content requirement for recyclates and secondary raw materials at European level.

We shall include chemical recycling as a recycling option in the Packaging Law. We shall campaign for a Europe-wide ban on municipal waste being sent to landfill. Together with the states, we shall take decisive action against illegal waste exports. Waste should only be exported to accredited recycling facilities and this should be enshrined in European legislation. We want a level playing field for plastic recyclates."

The announcements are ambitious. They will take years to implement. There is, though, no alternative





If all of these plans could be implemented in the coming years, then the innovation drive would be enormous – comparable perhaps only with the introduction of the TaSi landfill ban in Germany in 2005. Since coming into force, this law has – to date – led to a reduction in carbon emissions of almost half a billion tonnes.

Similar to this, the coalition partners are determined to push for a Europe-wide landfill ban. The new Government is also committed to introducing a product-specific minimum content requirement for recyclates, so-called minimum content mandates, and further increasing recycling rates. And it is even intending to introduce the recycling label. This label was first championed by REMONDIS and informs consumers about how much of the product they want to buy is made up of recycled raw materials and how much of the product can be recycled when it reaches the end of its useful life.

Just this August, REMONDIS managing director Herwart Wilms wrote a letter to Robert Habeck criticising the Green Party's Climate Action Emergency Plan. The circular economy was not mentioned at all even though there were ambitious plans in the Green Party's election manifesto about this. Prior to this, many constructive discussions had been held with representatives from all parliamentary groups about the link between the circular economy and climate action. Which is why Herwart Wilms was all the more delighted with the announcements made regarding recycling: "For the most part, the traffic light coalition agreement contains all the demands that we, as the recycling sector, had passed on to the negotiators."

The period of doing nothing has come to an end. A period of change is about to begin.



The aim must be to drive forward the optimisation of the circular economy in Europe as well – as is set out in the Green Deal



**"For the most part, the traffic light coalition agreement contains all the demands that we, as the recycling sector, had passed on to the negotiators."**

Herwart Wilms, REMONDIS Managing Director

# Providing help after the floods

REMONDIS EMPLOYEES MOVED IN RAPIDLY TO HELP THE FLOOD VICTIMS IN RHINELAND-PALATINATE AND NORTH RHINE-WESTPHALIA

Unusually heavy rain had been forecast several days ahead of time. Meteorologists began warning about the approaching weather system on Saturday, 10 July. And this system was moving very slowly – probably due to the effects of climate change. Too much water for the small streams and rivers in the regions most badly impacted. No one, though, had predicted just how much rain would actually fall. On 14 July, some parts of the German states of Rhineland-Palatinate and North Rhine-Westphalia were drenched by more than 100 litres of rainfall per square metre over a 24-hour period. Rivers reached record levels and caused devastating flash flooding, which destroyed almost 500 buildings, at least 192 of which were people's homes. Shops, hotels, factories and workshops were torn down by the waters. According to experts, more than 3,000 of the 4,200 buildings located along the Ahr River were damaged – over 70% of all the buildings. Over 180 people lost their lives.

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Shops, hotels, factories and  
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The extent of the catastrophe became clear as soon as the waters had receded. People from across the whole of Germany rushed to the regions to help those impacted by the floods. And this help is still being provided today as not all of the damage has been repaired yet. The infrastructure is also still in the process of being fixed. With bridges completely destroyed and roads damaged and, in some cases, closed off, it was particularly difficult for the people to collect the mountains of bulky waste and other types of waste from the streets. And this is a vital task as it prevents the spread of disease and maintains basic hygiene levels in both public and private spaces. REMONDIS colleagues travelled straight to the region to help out the waste management companies operating in the District of Ahrweiler. Everyone was totally committed to the cause. The helpers from the private and public sector waste management businesses were on hand to provide support as soon as the floods had receded even though many of their own homes or workplaces had been affected. They stayed in the region for hours on end voluntarily doing overtime and working at the weekend so that the local residents did not need to worry about public hygiene and their flood-damaged household items could be collected as quickly as possible.

Even FES, a company located in Frankfurt 200 kilometres away, sent staff to the flood-impacted regions



Many people working at REMONDIS' branches and associated companies volunteered to help out. Working together with their colleagues at the local waste management businesses, they managed to collect thousands of tonnes of bulky waste in no time at all

Peter Kurth, President of the BDE [Federal Association of the German Waste Management Industry] immediately summed up the situation for all those providing circular economy services: "What is most important now is to help all those living in the regions affected by the devastating floods. The refuse has to be removed from the streets as quickly as possible because waste – especially when it's heavily contaminated – can cause a whole range of problems, whether it be vermin, odours or hygiene." To begin with, one of the biggest challenges was to find places where the large volumes of waste could be temporarily stored and to ensure that the materials were then safely processed in accordance with all rules and regulations.

To begin with, one of the biggest challenges was to find places where the large volumes of waste could be temporarily stored and to ensure that the materials were then safely processed in accordance with all rules and regulations.

One of the main problems that the waste logistics experts had to solve was the huge amount of bulky waste. Enormous volumes were sent to some of REMONDIS' locations within just a few days – the same amount that they would normally receive in a year. The municipal association VKU declared that it would take them several months to remove all the waste materials. This catastrophic event generated over 300,000 tonnes of waste in the Ahr region alone. In a statement, the Ahrweiler district authorities described the size of the problem as follows: "This is the same amount as 40 years' worth of bulky waste – i.e. the same amount of bulky waste collected since 1981."

A large part of this bulky waste, which also had all kinds of household waste mixed in with it, was taken to landfills in line with an emergency decree. 100,000 tonnes alone were transported to the Ochtendung landfill and in no time at all the site had reached full capacity and was unable to accept any more materials. Simply landfilling residual materials is actually a waste management route that Germany has turned its back on. And for good reason. Waste containing large amounts of organic residue emits methane gas when it begins to rot and this gas is up to 87 times more damaging to the climate than CO<sub>2</sub>. The goal must be, therefore, to gradually remove the material from the landfills. Even if it cannot be recycled for reuse, it can at least be sent for thermal treatment, which is much better for the climate.

Mountains of waste were also piling up in Ertfstadt where the Erft – normally a small river – had destroyed half a neighbourhood causing it to collapse into a gravel pit. Here, too, the floods had destroyed roads and bridges so that, to begin with, it was almost impossible to collect the materials. Images taken by REMONDIS' branch in the Rhine-Erft District show how their employees tried to reach their flooded buildings on home-made rafts. And, despite their own difficult situation, the company's employees from Ertfstadt and the Ahr Valley



Our thanks go out to all the volunteers who gave their all to help the flood victims



did not hesitate to go and help the flood victims by picking up their household items that had been irreparably damaged by the water. A really sad job as everyone has belongings that are particularly important to them, such as photo albums and photos of their children – things that they have collected over many years and are irreplaceable.

All these objects were now being picked up and taken to REMONDIS' 'an der Tonstraße' branch. With lorries arriving every minute, heaps of bulky waste were piling up in the areas between the various recycling facilities (for which permits had been applied for and granted in an accelerated process). It is practically a miracle that they have already been sorted and processed just five months after the catastrophe. This was not a miracle, though – this happened thanks to the hard work and tireless efforts of the staff.

People working at some of REMONDIS' associated companies also volunteered their help. Wirtschaftsbetriebe Oberhausen (WBO), for example, provided support in two of the regions affected by the floods. 14 employees from this PPP between the City of Oberhausen and REMONDIS, which recently celebrated its 25<sup>th</sup> anniversary, travelled to the neighbouring town of Essen. Here, too, the buildings on the bank of the River Ruhr had been badly damaged by the flood. Three large bulky waste collection lorries and a pick-up truck were sent with them so that they could give a helping hand to Essen's waste management firm EBE (also a REMONDIS PPP) by removing the bulky waste and damaged electrical appliances from the streets. Two further WBO employees travelled to Bad Neuenahr. This town had not only had numerous houses destroyed by the floods but its sewer system had also become clogged up with sludge. WBO sent a vacuum/cleaning truck to the region to help them unblock the pipes. "Our employees travelled to the areas and worked hard to clean the sewer pipes so that that water could flow again when the next rainfall came," explained managing director Karsten Woidtke. REMONDIS Aqua's water specialists immediately provided practical support as well – travelling to the Ahr Valley to unblock the sewer system there (see pages 48-49).

REMONDIS' Eifel-Mosel branch supported the rescue efforts made during the actual floods by using six of their hook-lift trucks to transport sandbags to the worst affected neighbourhoods. At 2 o'clock in the morning, one of the employees tried using a REMONDIS excavator to remove the objects floating in the Biersdorf reservoir to reduce the force on the dam wall. Seven hook-lift trucks were then used the following day to start removing the bulky waste from the streets. At the same time, their colleagues working in the offices and at the weighing machines patiently answered the queries that were coming in practically every second.



Staff working at Awista, a company based in Düsseldorf, also worked non-stop after the floods – collecting 2,307 tonnes of flood-damaged bulky waste and around 900 household appliances. A total of 49 people from Awista, a joint venture between the City of Düsseldorf and REMONDIS, volunteered to take on extra shifts to help out. 333 tonnes of the bulky waste that they had collected were taken to REMONDIS Rhine-Wupper in Reisholz to be sorted. They had the same problem as all the other sorting plants in the affected regions: the normally recyclable materials had been so badly affected by water, sludge and faecal material that it was practically impossible to send them on for materials recycling. REMONDIS did its best, however, to recover as many materials as possible so that they could be recycled and reused. They had no choice but to send the rest for thermal treatment.

The services provided both during and after the catastrophe have shown once and for all that the people who work in the circular economy keeping the country, streets and sewers clean belong to the group of essential workers. Local inhabitants all around the country appreciate the efforts made by the drivers, refuse collectors, sorting experts, recyclers and sewer technicians. And they will continue to appreciate their work long after the flood damage has been repaired. Our thanks go out to all the helpers.

Parts of the Ahr Valley resembled a war-torn wasteland after the floods. Months later, work is still being carried out to clear up the region



# A 25-year public private partnership in Oberhausen

WIRTSCHAFTSBETRIEBE OBERHAUSEN (WBO) DELIVERS CONVINCING RESULTS

Wirtschaftsbetriebe Oberhausen (WBO) was founded 25 years ago. Right from the start, this firm was set up as a partnership between the city and a private sector partner; today, the city council owns a 51% share in the business and REMONDIS a 49% share. In an interview, WBO managing directors Karsten Woidtke and Andreas Kußel discuss why this public private partnership has been such a success and look ahead at its future prospects.



Public private partnerships are ideal for local authorities that need to save money but still wish to offer the best possible services. WBO is a textbook example of this

**RA:** It was quite a sensation 25 years ago for private sector and public sector partners to own a firm together – especially in the Ruhr region. How would you sum the business up?

**Kußel:** From a business point of view, a real success: the company has been permanently in the black since 1999. We moved all our operations to a single site back in 2001 to prevent things having to be done twice. We have access to the whole of REMONDIS' network when it comes to processing the collected materials – from recycling, to incineration, all the way through to the safe treatment of hazardous waste. This ensures that we can run a stable and cost-effective

business. And, of course, we benefit from REMONDIS' purchasing power as a major buyer when we need to procure new equipment such as vehicles and machinery.

**Woidtke:** The transfer of know-how is certainly another of the partnership's strengths. We can take a look at the processes and services being performed by our sister companies in the REMONDIS network and benefit from their experiences. This has enabled us to offer new services over the last two decades, such as the gradual introduction of separate collection schemes for recyclables. Equally, these companies have benefited from WBO's experiences as well.







Still a really good team after 25 years: five WBO dustmen who make sure that Oberhausen remains clean and tidy every single day

**RA:** So this transfer of know-how is not a one-off event but an ongoing process?

**Woidtke:** Sure. Just think of the ever-growing demands on businesses to grow sustainability and strengthen the circular economy. The waste management sector is a very important player here. We need to keep on learning and it's simply not possible for us to test everything ourselves.

**RA:** And what do the WBO employees think of this collaboration?

**Kußel:** We often get positive feedback from our staff. They benefit, for example, from the extensive range of further training and qualification courses and from the opportunities they have to talk to and exchange know-how with REMONDIS' experts. This helps us to be an even more attractive employer. We've been offering secure jobs for many years now and have only just recently increased the size of our workforce.

**RA:** What challenges will WBO have to face in the future?

**Woidtke:** As far as our customers are concerned – i.e. the residents of Oberhausen – this will mean continuing to ensure that fees remain stable, that the city remains clean and that we further grow our efforts to protect natural resources and be even more sustainable.

**Kußel:** And for the company, there's the whole question of digitisation, which is leading to many changes at WBO as well. And, of course, our task will be to continue to deliver an economically viable performance and to make sure it remains this way – despite having to face new challenges. This is something that we've always managed to do.



WBO is responsible for waste management, city cleaning tasks and the town's drainage systems as well as for sewer and road building projects. Around 410 employees deliver these services to the approx. 210,000 people living in Oberhausen, a city situated in the west of Germany's Ruhr region. In 2020, the company collected 88,000 tonnes of household waste and 23,000 tonnes of recyclables. WBO is in charge of almost 590 kilometres of roads and 570 kilometres of sewer pipes. The company currently offers 24 apprenticeship jobs and takes on around 90% of their apprentices at the end of their course.



WBO's two managing directors: Karsten Woidtke, responsible for the operational side of the business, and Andreas Kußel, who is in charge of WBO's commercial activities (from left to right)

# A special honour

## THE BOARD OF BIR'S FERROUS DIVISION APPOINTS DENIS REUTER AS ITS NEW DIVISIONAL PRESIDENT

Denis Reuter is a managing director at TSR Recycling, a long-standing member of the Bureau of International Recycling (BIR) and has been a member of the board of BIR's ferrous division since 2019. He joined TSR in 2010 and today he is responsible for the whole of the Group's ferrous and non-ferrous metal trading activities.

Based in the German town of Lünen, TSR Recycling GmbH & Co. KG is a European business trading in and recycling metal scrap with over 160 business locations – the majority of which can be found in Germany, the Czech Republic, the Netherlands and Poland. The company provides services for the metal-processing trade, large industrial customers and local authorities. Handling a good 7.5 million tonnes of material, TSR is a comparatively small player on the global ferrous and non-ferrous metal market, which involves in total around 1,600 million tonnes of metals. Which was why the company was all the more delighted that Denis Reuter has been given such a special honour.

Mr Reuter's appointment was recommended to the Division's board by the Division's nomination committee. As President of the Ferrous Division, Mr Reuter is a member of BIR's Executive Committee and, as a result, Vice President of the organisation. BIR President Tom Bird commented on Mr Reuter's appointment, saying: "I am delighted to welcome Denis to the BIR Executive Committee, and I am certain that he will greatly contribute to BIR's roadmap for the years to come. Having worked with him on the Ferrous board, I am confident that he will prove to be a great asset." Mr Bird also thanked Gregory Schnitzer from Sims Metal Management for his excellent services as President of BIR's ferrous metal division and for the ongoing support he gave BIR during the past difficult period.

**TSR**

THE METAL COMPANY

### A few facts & figures

BIR was founded in 1948 and was the first association to represent the interests of the recycling industry at international level. Today, BIR represents around 700 member companies from the private sector and 39 national associations in more than 70 countries across all continents. Together, the members make up the largest international recycling association.

BIR comprises four commodity divisions (Ferrous, Non-Ferrous Metals, Paper and Textiles) and has four commodity committees that focus on stainless steel and special alloys, plastics, tyres and rubber, and e-scrap. The association offers its members a dynamic forum, where they can exchange expertise and experiences. It acts as a platform for building up successful business relationships and promoting recycling among politicians and other industrial sectors.





# Smart reverse vending systems

REMONDIS RECYCLING TAKES OVER DIEBOLD NIXDORF'S REVERSE VENDING OPERATIONS

**REMONDIS Recycling GmbH & Co. KG has purchased all of the reverse vending activities operated by Diebold Nixdorf Incorporated. As a result, REMONDIS will now be able to offer the full range of services that will be needed for any future collection schemes set up as part of the European Circular Economy Action Plan to promote segregated collections and closed loop material cycles.**

REMONDIS has taken over Diebold Nixdorf Technology GmbH and Diebold Nixdorf Retail Services GmbH as part of a share deal. The acquisition must still be approved by the relevant competition authorities.

## Heading towards a genuine circular economy

As set out in the deal, REMONDIS shall continue to operate the business with smart takeback technology in Germany. The implementation of the Single Use Plastics Directive will also lead to further collection schemes being set up in Germany and abroad to facilitate the segregated collection of recyclables. The facility in Ilmenau that produces the reverse vending machines and the national service division responsible for Germany have also both been acquired.

“REMONDIS’ purchase of DN Technology – the reverse vending machine production division – and the DN Retail service division is an important step for the company as it moves towards becoming a full service provider within the circular economy. We can now offer our customers a comprehensive range of recycling solutions both in Germany and

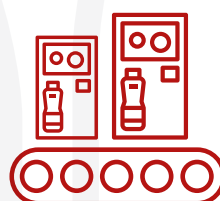
many other countries. Together with DN Technology and DN Retail, our portfolio of services ranges from taking back high quality recyclable materials and delivering reverse vending logistics, to sorting and recycling, all the way through to producing high quality recycled raw materials that can then be reused to make new products, effectively returning them to their original application,” explained Ralf Mandelatz, Managing Director of REMONDIS Recycling.

“By doing so, REMONDIS wishes to contribute towards the creation of a genuine closed loop circular economy. Setting up smart takeback schemes is fundamental here as it is such schemes that make it possible for the materials to be processed into high quality recycled raw materials,” he continued.



This purchase is an important step for REMONDIS as it moves towards becoming a full service provider within the circular economy

The facility in Ilmenau that produces the reverse vending machines and the national service division responsible for Germany have also both been acquired





# Collaborating to make the most of sewage sludge

MVK AND REMONDIS, REGION NORTH FORM A PARTNERSHIP TO BUILD AND RUN A SEWAGE SLUDGE INCINERATION PLANT AND PHOSPHORUS RECOVERY FACILITY

Müllverbrennung Kiel GmbH & Co. KG (MVK) and its project partner REMONDIS, Region North are planning to set up a sewage sludge incineration plant with an integrated phosphorus recovery system. The partners presented their joint project on 23 September 2021. Prior to this, REMONDIS regional managing directors Wolfgang Steen, Georg Jungen and Matthias Hartung had worked with Ralf Czarnecki, managing director of REMONDIS Aqua Stoffstrommanagement, to draw up a convincing and sustainable concept, with which – after several years of extremely constructive negotiations – they won over MVK managing directors, Dr Frank Ehlers and Daniel Benedict.

The legislator has made it mandatory for phosphorus to be recovered from 2029 onwards. Kiel is setting the course for this right now



“This lighthouse project will ensure that the municipal sewage sludge in Kiel will soon be treated using a net zero process and that the energy produced from this process will be able to be fed into Kiel’s network as district heat,” commented the Mayor of Kiel Dr Ulf Kämpfer during the signing of the contracts. Together, the shareholders – the City of Kiel and REMONDIS GmbH & Co. KG, Region North – intend to invest 80 million euros. Kiel council passed a unanimous resolution approving the project in August 2021. “Besides providing a supply of green district heat, this plant will also be reusing the water recovered during the sludge pre-treatment stage in its own operations – a further step towards protecting the environment and tackling climate change. This project is being supported by the EU LIFE programme as part of the European Union’s Green Deal,” the Mayor of Kiel continued, whose city actively promotes climate action.

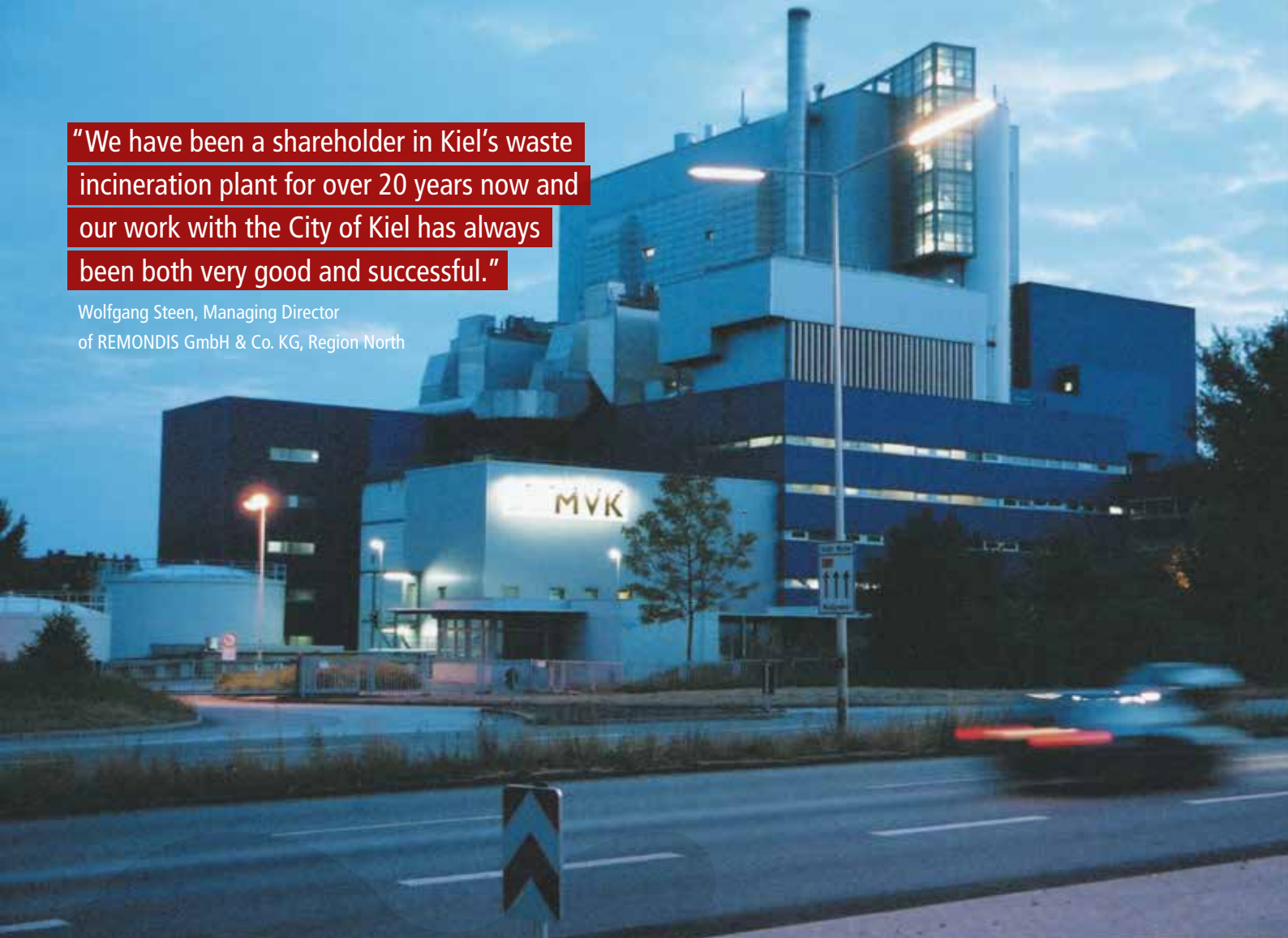
“We have been a shareholder in Kiel’s waste incineration plant for over 20 years now and our work with the City of Kiel has always been both very good and successful,” explained Wolfgang Steen, managing director of REMONDIS GmbH & Co. KG, Region North. “Which is why we are particularly pleased that we will not only be building and operating the sewage sludge incineration plant together but also Germany’s second phosphorus recovery facility. We have been committed to Kiel for many years and this long-term contract – which covers a term of 20 years plus the option to extend – further reinforces this commitment. This partnership with the City of Kiel is a model for REMONDIS across the country.”

MVK’s Managing Director, Dr Frank Ehlers, Sabine Schirdewahn, Plant Manager at Kiel’s Eigenbetrieb Beteiligungen, Wolfgang Steen, Managing Director of REMONDIS, Region North, and the Mayor of Kiel, Dr Ulf Kämpfer, were delighted to be able to sign the contract for a new sewage sludge incineration plant and phosphorus recovery facility



**"We have been a shareholder in Kiel's waste incineration plant for over 20 years now and our work with the City of Kiel has always been both very good and successful."**

Wolfgang Steen, Managing Director  
of REMONDIS GmbH & Co. KG, Region North



Wolfgang Steen continued: "It is REMONDIS' mission to generate recyclable materials from every single gram of waste. With this in mind, we've been working on the important task of recovering phosphorus – a vital substance and finite raw material – from sewage sludge for many years now so that it can be returned to production cycles. This pioneering project in Kiel will be using the TetraPhos® process, which was developed by REMONDIS itself. This is a perfect fit as it means we will be adding more of our highly specialised expertise in the areas of climate action and environmental protection to the long-standing partnership with the City of Kiel."

Sabine Schirdewahn, plant manager at Kiel's Eigenbetrieb Beteiligungen, said: "The collaboration between the managing directors of Kiel's waste incineration plant has been very good and constructive for over 20 years. It is shaped by their determination to ensure the plants' operations are sustainable and that they are run safely to protect both people and the environment. At the same time, besides actively protecting the environment and curbing climate change, Kiel's waste incineration plant and the future sewage sludge incineration facility and phosphorus recovery system are all sound and viable businesses."

"With the contract signed, MVK can now recycle sewage sludge and recover the vital raw material phosphorus," concluded Dr Frank Ehlers, managing director of MVK. "Besides recovering the phosphorus, our partner REMONDIS will, over the next 20 years, be responsible for sewage sludge deliveries, sewage sludge transport and ensuring the sewage sludge can be handled when the plants are shut down for inspections. In this particular partnership, MVK will be in charge of building and operating the sewage sludge incineration plant – the next phase of the project can now begin. We're really pleased that this stage has been reached as our team has been working hard on this for several years now. The project is progressing really well," he continued. A number of key preliminary tasks have already been wrapped up. The control technology needed to refurbish the existing plant and connect the new – yet to be built – facility has also been agreed on by contract. And the very important job of searching the grounds for any potential hidden explosives has been carried out without incident and will soon be completed. The next milestone can then begin on Kiel's path to becoming net zero.



This project is the result of the long-standing, constructive collaboration between the associated REMONDIS companies as well as between the cooperation partners MVK and REMONDIS



# EU compels councils to promote clean vehicles

REMONDIS HAS A VARIETY OF SOLUTIONS FOR DELIVERING LOW-EMISSION REFUSE COLLECTION SERVICES

Across Germany, local and city authorities have found themselves facing a new challenge this year. The Federal Ministry of Transport (BMVI) has transposed the EU's new directive on the promotion of clean and energy-efficient road transport vehicles (Clean Vehicles Directive) word for word into German law (Saubere-Fahrzeuge-Beschaffungs-Gesetz / Clean Vehicle Procurement Act). This aims to increase the efforts made by councils to decarbonise and boost the demand for clean vehicles. This new law covers a wide range of public services – including, of course, refuse collection. For many years now, REMONDIS has been offering district and city authorities a variety of logistics solutions to enable them to lower their emissions – solutions that also involve various kinds of alternative fuels. The cities of Cologne, Frankfurt and Münster are already leading by example – each with their own specific focus and always with a bespoke system to meet their particular urban logistical requirements.

## Biogas filling station commissioned in Cologne – CO<sub>2</sub> emissions cut by 21,000t

Thanks to a partnership between Abfallwirtschaftsbetriebe Köln GmbH (AWB), AVG Kompostierung GmbH (AVG), GVG Rhein-Erft, REMONDIS Rhineland and RheinEnergie AG, there will be around 100 commercial vehicles travelling on Cologne's roads next year that will be run on climate-neutral biogas. For this to happen, a new biogas filling station has been commissioned on AVG's premises in the north of Cologne. In the future, this new filling station will supply REMONDIS and AWB's vehicles with green fuel. What makes this so special is that the refuse collection vehicles collect and transport the raw material needed to produce their own fuel: organic waste. Fully closing a local material stream. This food and garden refuse is taken to the composting plant run by AVG. Some of the material is first transferred to the neighbouring digester plant where, in the absence of air, it is used to produce biomethane. This process takes around two weeks and the

biogas can then be fed into the gas network and used to fill the refuse collection trucks' tanks. Any remaining digestate is transferred back to the composting plant where it is transformed into high quality compost, primarily for the agricultural sector.



Michael Lindner, REMONDIS, Achim Südmeier, RheinEnergie, and William Wolfgramm, Head of Cologne's Department for the Environment, Climate and Real Estate (from left to right), were all delighted to be able to open the new biogas filling station in Cologne

Over a ten-year period, the new filling station will reduce carbon emissions by around 21,000 tonnes and slash fine particulate emissions by almost 95%. At the same time, the vehicles will be much quieter than the lorries run on conventional fuels – cutting noise levels by an impressive five decibels (A).

### Frankfurt: 30% less energy and CO<sub>2</sub> with the help of hydrogen from thermal treatment

Having carried out a variety of trials, FES Frankfurter Entsorgungs- und Service GmbH has decided to purchase eight electric refuse collection trucks. The company, a joint venture between the City of Frankfurt and REMONDIS, announced in October that it had put in an order with Mercedes-Benz for the vehicles. The eEconic lorries are due to be delivered at the end of 2022. Prior to this, the Frankfurt firm had tested a pilot vehicle run on natural gas and electricity as part of its refuse collection fleet for two years and had the results evaluated by scientists. "The trial results were good. FES will not be continuing this project, however, as the manufacturer has decided not to pursue this concept," explained FES managing director Dirk Remmert. Rosemarie Heilig, head of the City's environmental department and chair of FES' supervisory board, was delighted with the course that has now been set: "This makes Frankfurt one of the first cities in Germany to systematically switch over its commercial fleet to e-mobility to reduce harmful emissions. Thanks to its companies such as FES, the City is acting as a role model when it comes to transitioning towards climate-friendly transport and mobility. And these modern waste collection trucks will play an important role in this." Dirk Remmert took a look ahead: FES will, over the medium term, be looking at using fuel cells in its heavy vehicles. "We will be working with our partner Mainova here so that the hydrogen we need for the fuel cells will, for the most part, be net zero as it will come from thermally treating residual waste at the waste incineration plant." Moreover, FES' Euro 5 vehicles will continue to be run on Saria's biodiesel until they are decommissioned. The manufacturer Mercedes has not yet received a permit for their use as Euro 4 vehicles.

### Net zero in 2030? Biogas allows clean refuse collections in Münster here and now

Two of the eight vehicles in REMONDIS' fleet in Münster are now being run on biogas. "We are doing this to move forward our sustainability efforts," commented Thorsten Feldt, managing director of REMONDIS Region West. The aim of this pilot project is to look at how more climate-friendly fuels can be deployed in Münster's refuse collection system. The company decided to use biogas because hydrogen and e-mobility are simply not efficient enough for such large vehicles and such large volumes of waste. "Electric trucks can't carry as much material – their load is about 30% smaller,"

Feldt explained. What's more, it would be difficult for the vehicles to collect the waste and complete the 30-100km routes. Using biogas is the right solution as a climate-friendly alternative to diesel – and is available right now unlike hydrogen and electric engines. A maximum 10 minutes are needed to fill a truck's tank with gas. Both of REMONDIS' new collection vehicles can hold 120 kilograms of natural gas and they have already been put to work. Moreover, Münster is situated right in the middle of an extensive agricultural and cultivated landscape. The neighbouring district of Coesfeld, for example, has the highest organic waste collection rates across the whole of Germany – which means there is plenty of biogas for the Münsterland region as well.



Plans were made for this pilot test at the beginning of the year. Both trucks have now been delivered and the results will be evaluated over the coming months. If the trials go well, then REMONDIS shall gradually switch over its Münsterland fleet to climate-friendly vehicles. After all, Münster plans to be net zero by 2030 – and REMONDIS is providing a number of solutions to help it reach its goal. Besides working in this area with the City of Münster, REMONDIS is also continuing this project with the District of Coesfeld. A total of six biogas-run vehicles have already been ordered for the district and they should be out and about on the roads in 2022.

The new vehicles being filled up at a nearby Westfalen filling station. Thorsten Feldt (REMONDIS, left), Ralf Mertins (Stadtwerke, 2<sup>nd</sup> left) and Andre Stracke (Westfalen filling station, right) are looking forward to seeing the results of the pilot tests





# Apprentices promoting climate action and resource protection

**THE RETHMANN GROUP IS CURRENTLY TRAINING ALMOST 2,200 APPRENTICES IN A NUMBER OF SUSTAINABLE SECTORS – DESPITE THE GENERAL DECLINE IN APPRENTICESHIP JOBS ACROSS GERMANY**

Besides wishing to find a good apprenticeship, a growing number of school-leavers are also hoping to train in a company that can offer them job security. Looking at the way the German economy developed last year, this is no longer something that can be taken for granted. Many companies have had to cut their workforce and make the decision to no longer invest in apprentices. It is essential, however, that firms have an active and forward-looking personnel development concept if they are to hold their own in the competition for young talent. Which is why the RETHMANN Group still sees apprenticeships as being a crucial economic factor and intends to continue its successful training programmes. This year, over 600 young people began their professional careers at one of the RETHMANN Group companies – laying the groundwork for a sustainable future in the industry of their choice.

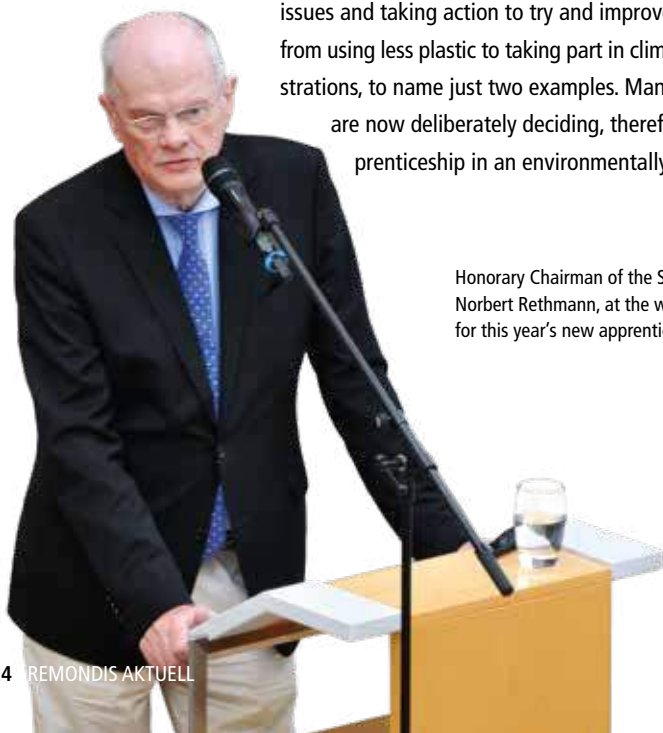
An ever-growing number of first-time employees wish to have a sustainable future. While at school, they spent much of their spare time focusing on environmental and climate issues and taking action to try and improve the situation – from using less plastic to taking part in climate action demonstrations, to name just two examples. Many young people are now deliberately deciding, therefore, to do an apprenticeship in an environmentally friendly industry.

According to the 2020 Status Report on the German Circular Economy, around 310,000 people work in the circular economy in Germany alone and generate a turnover of ca. 84 billion euros. The importance of the sector was further underlined when the German government placed the circular economy on its list of key industries last year. However, the spotlight is not only being shone on the sector because of the essential services it has provided during the pandemic but also because of the way it is actively helping to protect the environment.

## **The RETHMANN Group's apprenticeship figures**

Following the start of the 2021 apprenticeship year, there are now almost 2,200 young people doing an apprenticeship within the RETHMANN Group, 616 of whom began their course this year. As usual, the majority of them are working at REMONDIS. The recycling experts alone are training 1,351 young people, who are either in the 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> year of

Honorary Chairman of the Supervisory Board, Norbert Rethmann, at the welcome party held for this year's new apprentices







their apprenticeship course, among them 431 apprentices who joined this year. The international logistics specialist Rhenus currently employs 662 apprentices, 121 of whom are new intakes. And Selm-based Saria has a total of 77 apprentices, 27 of whom began their course this year. The world's largest provider of local public transport services Transdev (in which REMONDIS owns a 34% share) employs 86 apprentices in Germany, 37 of whom joined this August.

Once again, the HGV driver apprenticeship course is top of the list of the most popular professions with 372 apprentices. This is followed by those wishing to become industrial management assistants (187 apprentices) and office management assistants (129 apprentices).

### New apprentices welcomed by Norbert Rethmann

The traditional welcome party was held in the reception area of the company's head office building at the Lippe Plant under the patronage of the honorary chairman of the supervisory board, Norbert Rethmann, with appropriate hygiene measures in place. A group of approx. 40 apprentices from a variety of courses were invited to the event to represent this year's new intakes.

Around 40 apprentices attended the event at the Lippe Plant in Lünen that was held to congratulate and welcome them to the company

"Recycling our valuable resources and handling them sustainably are two vital preconditions for preserving our planet for future generations. What is needed – in particular from younger generations – are innovations, new creations and sustainable prospects to create a strong societal impetus," commented Norbert Rethmann during his speech.

## REMONDIS apprentice with the best results

Christin Pieper, an apprentice at REMONDIS Assets & Services in Lünen, was recently presented with a special award during the honours ceremony held by the Dortmund Chamber of Commerce (IHK). She was named 'Best Apprenticeship of the Year' for her industrial management assistant course having achieved the highest results of her approx. 6,500 fellow course members from Dortmund, Hamm and the district of Unna, who all took their final exams in 2021. She believes that her employer was one of the reasons for her being able to achieve this: "The intensive revision courses that were held in small groups and began a good 12 months before the finals took place provided me with the best possible support." Christin currently works in supply chain management and is already looking to the future: "At the moment, I'm studying Economics at FH Münster alongside my job and should graduate with my Bachelor's degree at the beginning of 2023. I can well imagine doing my Master's after that."



Christin Pieper received her special award during the honours ceremony held at the Signal Iduna Park in Dortmund. She was congratulated by IHK President Heinz-Herbert Dustmann (right) and Deputy Managing Director of the IHK Wulf-Christian Ehrich (left)

# Recovering e-scooters from the Rhine

RETRON ENSURES THE HIGHEST LEVELS OF SAFETY ARE IN PLACE



## RETRON

At the beginning of September, the “Shared Mobility” platform – which unites the seven firms renting out e-scooters in Cologne – asked companies to join them in recovering e-scooters from Rheinau Harbour in Cologne. REMONDIS’ division RETRON were immediately on board – or rather in this case on the riverbank – to help out. Specialising in the safe handling and transport of lithium-ion batteries, this division was there as a safety expert to support the mobility providers’ project.



**What many people are unaware of:** devices containing Li-ion batteries are highly dangerous and must be handled and transported with the utmost of care – to protect both people and the environment

People filming themselves throwing rented e-scooters into rivers and lakes would appear to be one of the latest trends on social media. The young people uploading these films onto TikTok are obviously getting a lot of likes. This thoughtless and irresponsible behaviour is causing a number of issues for those not caught up in the trend. The companies renting out the e-scooters are particularly impacted by this latest craze and have to solve the problem of how to get these scooters out of the water as quickly as possible and in one piece. An event recently organised by the companies to recover their e-scooters took place with much media hype and involved an impressive mobile crane being set up in front of the well-known chocolate museum. But that’s not all. It was also very important for the Shared Mobility organisers to have the e-scooters transported safely and recycled once they had been recovered. Which was why they had REMONDIS’ RETRON division at their side to provide them with specialist staff, purpose-built tools and secure storage and transport containers.

### Highly dangerous batteries

Following the stringent safety measures put in place, two safety specialists were at the harbour bank to take the e-scooters as soon as they were pulled out of the Rhine so that they could dismantle them straight away. One of them was Carsten Koch, a fire protection expert and firefighter from REMONDIS, whose main area of expertise is dealing with fires caused by lithium-ion batteries. “We separate the base or the deck – where the lithium-ion batteries are found in most e-scooters – from the handlebars,” he said explaining the procedure. While the handlebars containing harmless electronic and metal components were placed in a normal e-waste box, the decks with their Li-ion batteries were carefully stored in the special RETRON containers – before being sent on for recycling.



To date, a total of 61 e-scooters have been recovered. "Shared Mobility" does not intend to give up its battle against this latest indescribable TikTok trend



### The dangerous nature of lithium

The RETRON containers were specifically developed as a safe system to transport potentially damaged lithium-ion batteries. "Every electronic device that contains a lithium-ion battery brings with it a high risk of self-combustion. Especially here where we can assume that the batteries have been damaged either from smashing against the bottom of the harbour basin or some other reason," explained Lukas Wiedenmann, who was on site at the event on behalf of RETRON. Batteries that are damaged or still partially charged can also catch fire here on land and, in the worst case scenario, explode. "It would be completely irresponsible to store and transport the e-scooters in open containers with no further safety measures in place, as they pose a risk to both humans and the environment," Wiedenmann continued.

### Locking away the risks

Companies operating in the circular economy often find themselves having to deal with explosions and fires caused by damaged Li-ion batteries. These put their staff at risk and destroy their vehicles and facilities. In many cases, the fires are almost impossible to keep under control as there are not enough extinguishing agents on hand. Which is why RETRON developed a UN-certified, high-temperature-resistant container for storing and transporting damaged and faulty Li-ion batteries that provides ideal protection in the case of an explosion or fire. Thanks to the special insulation material, the temperature of the container's outer walls remains below 100°C even when the temperature inside reaches 1,000°C – and this for over a period of three days. No matter, therefore, whether it involves an e-scooter recovered from the Rhine, an e-bike or an electric drill from a DIY store – many individuals, commercial traders and industrial businesses are often unaware of the danger posed by Li-ion batteries. Just like the large e-scooter batteries, small empty household batteries must also be transported to recycling plants safely when they reach the end of their useful life. One thing is true for all these batteries: they should never be carelessly thrown into the residual waste bin; on the contrary, they should always be handled, transported and processed with the greatest of care.

### Every scooter counts – for the environment

To date, a total of 61 e-scooters have been recovered. The work performed by the two divers was not easy as they had to stand in mud up to their knees and use only their feet to search for the scooters. Even though it was difficult going, they are determined to continue doing this work in other German cities as well. It is just too uncertain what damage the e-scooters' batteries may cause under the water, they said.



No one is quite sure what damage the e-scooters might cause under water. Li-ion batteries contain substances that are harmful to people's health and to the environment – and these should never be allowed to escape either on land or in the water



Were you not aware of the danger posed by Li-ion batteries? Are you interested in finding out more about the RETRON system?

Then simply go to: [retron.world](https://retron.world)



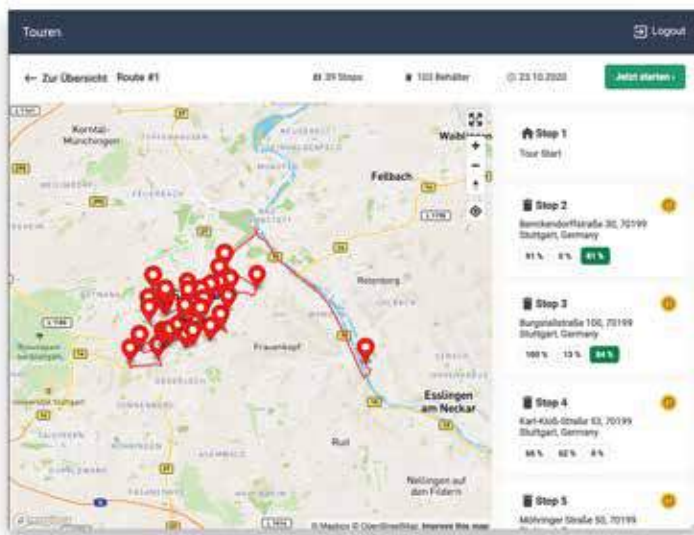


# No wasted journeys

BINITY DIGITALLY RECORDS COLLECTION PROCESSES, MONITORS BIN FILL LEVELS AND MAKES IT EASIER TO PLAN COLLECTION ROUTES



Most people have experienced it at some time or other: having gathered together enough bags of old bottles and paper at home, they then drag them to the nearest bottle bank or paper recycling bin only to find they are full to bursting. No amount of pushing will make space either. The last thing on a person's mind when they are standing there with their full bags is just what a complex process it actually is to empty such bins. It takes a lot of work to plan the routes, vehicles and staff. REMONDIS Digital Services GmbH has now developed software to ensure drivers can plan their future routes efficiently and sustainably and that there are no wasted journeys. The name of the software: BINITY.



All bins, vehicles and routes are depicted in BINITY. This provides schedulers with an overview when planning collection routes

Some bottle banks and paper recycling bins are used so often that they are almost permanently overflowing. Others are visited so rarely that it makes no sense to empty them frequently. It is neither efficient nor sustainable for collection lorries to drive to empty bins. Time is lost and the flow of traffic is impacted. The software solution BINITY provides a digital overview of the situation – depicting all the bins, vehicles and routes. This enables the routes to be planned efficiently and makes the whole collection process more transparent. What's more, the software makes it possible for new drivers to learn their jobs, for replacements to be found if a driver calls in sick and, if there is an unexpected interruption, for lorries to continue exactly where the work had stopped. All data is available at a glance – or rather with a single click. And BINITY can do even more: if a bottle bank is equipped with a sensor, the software can also measure the fill level.

## A digital cockpit

The first thing that needs to be done is to digitise the collection operations, i.e. to feed the planned routes – which are normally handwritten or in Excel spreadsheets – into the system. The drivers can use a whole range of options once the data is in the 'digital cockpit'. While carrying out their work, they can see which bins still need to be emptied, enter information about fill levels and add photos and comments. By doing so, they put more and more information into the digital database, all of which will help them to plan their future routes.

BINITY is already being deployed in the District of Heilbronn by the tin can collection team. In this particular case, one vehicle has one week to empty a total of 300 tin can recycling banks. "Our goal was to provide the scheduling department with a simple and useful IT tool to help them plan and optimise their collection routes," explained branch manager Tobias Kutz. And it was well worth its while: thanks to BINITY, the time needed to empty the bins has been reduced from five days to four.

The live data is also very useful as customers often ring up to find out how many bins have already been emptied: "The office staff no longer need to contact the drivers as they mark the bins they have emptied on their tablet and are then guided to the next container." Tobias Kutz is pleased with the system so far and emphasised: "One of the main reasons why we've been able to use the software so successfully can certainly be put down to the close collaboration with REMONDIS Innovation Hub."



REMONDIS Innovation Hub's goal is to turn ideas into marketable solutions. BINITY is the second product to be marketed by REMONDIS Digital Services

### Keeping an eye on fill levels

What works well in Heilbronn may be less suitable for other collection areas. Which is why BINITY can be adapted and extended to meet individual needs. The route-planning process can be static (without sensors), dynamic (full sensor system) or hybrid.

Bottle banks or recycling bins set up in remote or less frequented areas can often pose a challenge as it is difficult to know when they are full. When does it make sense to drive out and empty them? The dynamic or hybrid solution can help out here: every container (dynamic) or a selection of bins (hybrid) are fitted with a sensor that records the fill level. This information is then used to automatically determine the best collection route for a certain day. If the sensor shows a low fill level then there is no need for a lorry to travel to the bin. Likewise, this system prevents bins from getting too full.

### For towns and for business premises

What can be used in cities can also be used on industrial grounds. Factory premises can be depicted in BINITY and the location of the bins added to the map. With the help of an app, the industrial customers can then let the waste management companies know when the bins need to be emptied. Sensors can also be fitted to the bins to keep an eye on fill levels and monitor the system by GPS. As a result, in-house waste management processes can be digitally monitored and optimised.

Thanks to BINITY, there are no wasted journeys. This saves time – time which can be put to good use for other tasks. What is even more important: the software helps curb climate change. Every unnecessary trip that can be avoided means fewer carbon emissions. So everyone benefits from this solution. The local inhabitants, who have efficient waste collections. The drivers, whose daily work is made easier. And our planet – which needs to be protected.

Thanks to BINITY, there are no wasted journeys. This saves time – time which can be put to good use for other tasks.

# Fighting phishing mails

## REMONDIS IT SERVICES DEPLOYS A VARIETY OF MEASURES TO TACKLE EMAIL SCAMMING

They are easy to spot: emails full of grammatical errors trying to entice people to click on a link and reveal sensitive data. But let's be honest: some of these so-called phishing mails are more difficult to detect and, with the stress and strains of everyday life, all too often we've clicked on the link before recognising the danger.

This is certainly one of the reasons why phishing and other kinds of scams cost the German economy a total of 223 billion euros every year. This was the latest figure published by the German IT association, BITKOM. In the same study, the association reports that almost one-fifth of all German companies have suffered losses as a result of phishing. According to industry experts, practically every single company in the country is at risk. Which is why having a professional risk management system in place is essential to ward off such attacks.

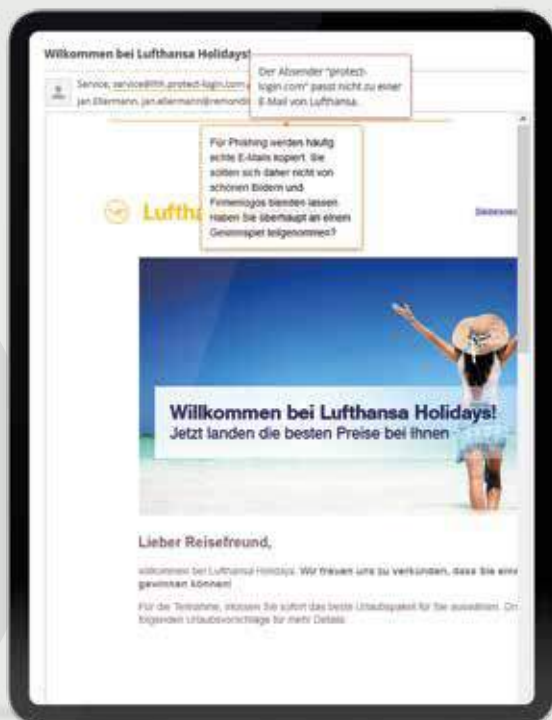
REMONDIS IT Services is responsible for such systems at REMONDIS. Information security officer Jan Ellermann made it very clear that the cyberattacks targeted at firms are not the same as the mass-market campaigns sent to private individuals: "The attacker chooses a specific target, spends some time preparing their attack and then systematically searches for weak spots."

### A multi-layered approach

For an anti-phishing protection system to be a success, therefore, it must contain several well-coordinated measures. Three filters are currently being used at REMONDIS: all incoming emails are first automatically screened and filtered in line with the company's latest criteria – to prevent any suspicious mails from being delivered in the first place.







A phishing mail – not all of them are instantly recognisable as scam mails

Well-trained employees are needed to tackle the problem of phishing: REMONDIS has an online course on its e-learning platform to teach its staff about these emails



A small number of mails, however, still manage to slip through the net. It is now up to the recipient to pick up and delete fake mails. REMONDIS IT regularly holds online seminars for the approx. 13,000 in-house users to raise awareness and help them identify suspicious mails. The IT department also sends out test mails. If the recipient clicks on this fake phishing mail, then they are immediately sent information explaining why it was a scam email: this should help them to spot such mails in the future.

REMONDIS is also planning to introduce a notification procedure that will allow employees to highlight any fake emails they find in their inbox. This phishing button will be part of a self-learning system that should enable any changes in the behaviour of attackers to be incorporated into the company's defence strategy more quickly.

Security systems are also in place, of course, if the worst comes to the worst: technical measures make it possible for REMONDIS IT to stop data being transferred if someone accidentally clicks on a phishing mail or even enters data onto a fake platform. Thanks to these various procedures, REMONDIS has succeeded so far in avoiding serious damage. Around 124,000 mails are sent to the company every day, of which approx. 27,000 are phishing or spam mails. Jan Ellermann stressed: "If we are to continue to be successful, then our employees need to be on the alert all the time. And we have to make sure we develop the right technology to stay ahead of the game. This is what our team is working on each and every day."

### Phishing mails

Phishing is a portmanteau combining the words 'password' and 'fishing'. Their goal: to lure people into revealing their login data so that the attackers can make transactions in the user's name or steal their data. Such mails copy the design and language of the supposed sender. There are a number of clues, though, to help spot a phishing mail:

- The message creates a sense of urgency
- The text is not written well, with poor spelling and grammar
- The email address does not match the organisation of the supposed sender
- The message asks for data that the assumed sender should know or would normally never ask for



REMONDIS IT regularly holds online seminars for the approx. **13,000** in-house users to raise awareness and help them identify suspicious mails

# Rhine-Erft District takes a big step to becoming net zero

## NEW DIGESTER OFFICIALLY OPENED AT THE VZEK

The new digester plant at the VZEK (Erftkreis Recycling Centre) was officially opened on 06 July 2021 and is now being used to transform organic waste into energy. The decision was made to modernise and extend the site as the neighbouring Rhine-Erft district wished its approx. 55,000 t/a of municipal organic waste to be used to generate electricity.



Besides RETERRA's Managing Directors, Barbara Junker (centre) and Aloys Oechtering (3<sup>rd</sup> left), the event was also attended by the District Administrator of the Rhine-Erft District, Frank Rock (4<sup>th</sup> left), and the Honorary Chairman of the Supervisory Board of the RETHMANN Group, Norbert Rethmann (5<sup>th</sup> left)

As a result, the VZEK composting plant in Erftstadt was extended and is now home to a modern digester with a throughput of 35,000 t/a and a new tunnel composting system able to handle almost 40,000t a year.

### More climate action and resource protection in the region and beyond

In light of the need to curb climate change and conserve natural resources, the VZEK and its new facilities will be contributing towards the raw material and energy transition in a number of different ways. The site has increased the amount of materials it can handle by a further 45,000 t/a. Its so-called co-digestion plant can process a total of up to 183,000t of organic waste every year and transform it into high quality compost and low carbon biogas. This biogas is then used to produce climate-neutral electricity in the combined heat and power plants, which are also located on the site.

The reason for the modernisation project: the Rhine-Erft district's wish that its approx.

**55,000 t/a**

of municipal organic waste be used to generate electricity

Sealing the opening of the new plant: Frank Rock, District Administrator of the Rhine-Erft District (l.), and Norbert Rethmann, Honorary Chairman of the Supervisory Board of the RETHMANN Group (r.)



Looking ahead, the biogas could also be used as a carbon-neutral fuel in the future to run the growing fleet of climate-friendly refuse collection trucks in the Rhine-Erft district and beyond.

**Official opening held on site and broadcast on the internet**

Besides RETERRA's managing directors, Barbara Junker and Aloys Oechtering, the event was also attended by the district administrator of the Rhine-Erft District, Frank Rock, and the honorary chairman of the supervisory board of the RETHMANN Group, Norbert Rethmann.

A round table discussion was also held during the opening, which was broadcast on the internet. The guests and the moderator made the most of this opportunity to discuss the importance of the circular economy as a means to conserve our planet's natural resources and tackle climate change. The German government's new Climate Change Act stipulates that Germany must be net zero by 2045 – five years ahead of the EU Commission's own ambitious goal.

The existing composting plant has been extended and is now home to a digester with a throughput of 35,000 t/a and a new tunnel composting system able to handle almost 40,000 t/a

Local authorities must also plan for this development and they have already begun preparing themselves for some major changes. Working together with its partner RETERRA, the Rhine-Erft District has now taken an important step towards becoming net zero.



The VZEK will be contributing towards the raw material and energy transition in a number of different ways in the future



# A step further towards a circular economy

REMONDIS MEDISON WITH AN INNOVATIVE SYSTEM FOR HOSPITAL WASTE

## REKOMED

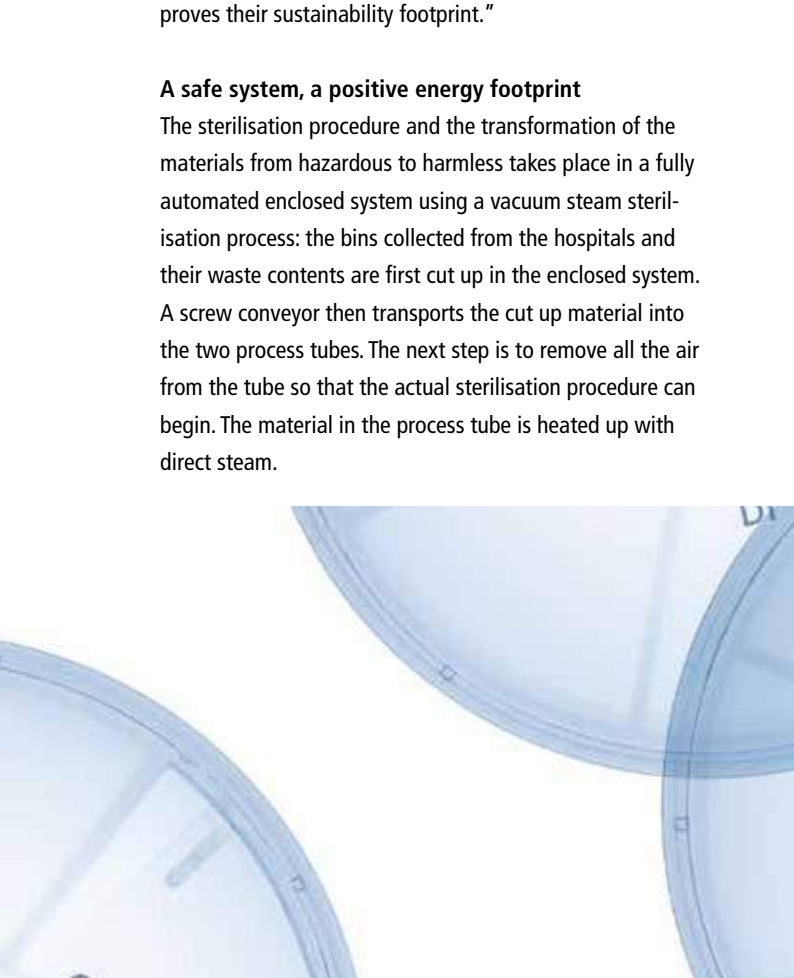
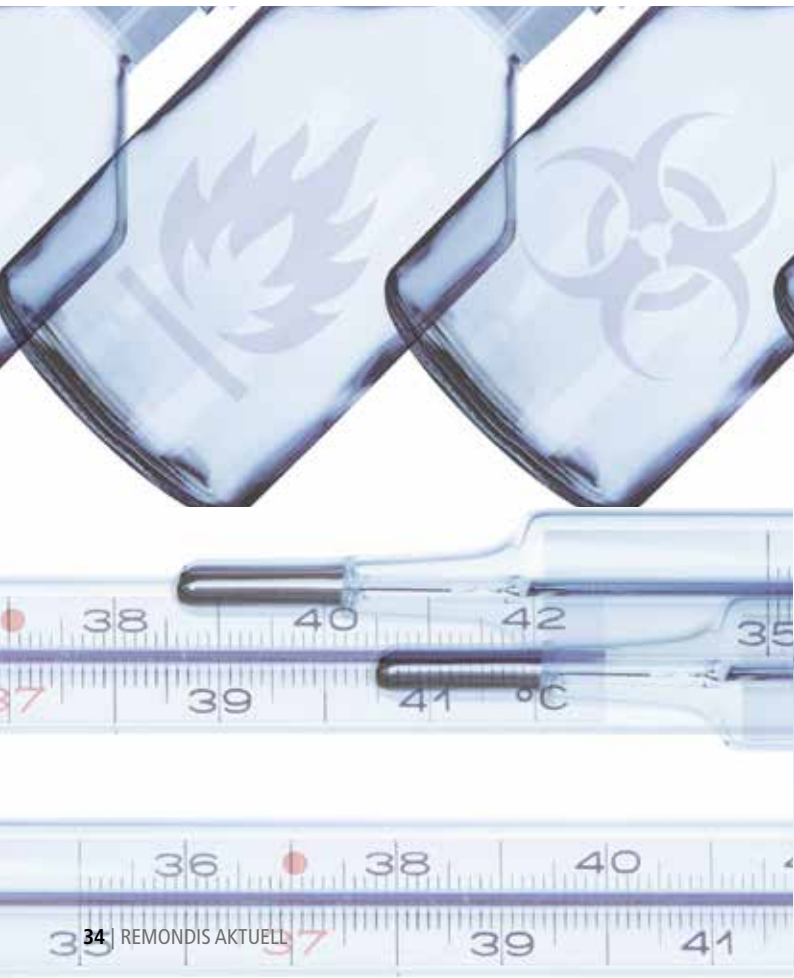
The goal is massive and requires many different smart steps: to create a circular economy. REMONDIS took up this challenge many years ago and has continuously been improving raw material recovery rates and doing everything in its power to make sure its various recycling processes have an efficient energy footprint. This is also true for its incineration activities. REMONDIS Medison has now developed a revolutionary method for incinerating highly infectious hospital waste. Thanks to REKOMED, substances that would previously have to be sent to hazardous waste incineration plants can now be transformed into refuse-derived fuel. This can then be used to generate energy in conventional recycling plants.

To achieve this, infectious and highly infectious residual substances are cleansed to such an extent that they no longer fall into the 'hazardous waste' category. This highly effective sterilisation process is performed at Lünen using a vacuum steam system that has been approved by the Robert Koch Institute and is even effective against Ebola, coronavirus and HIV viruses. At the end of the process, the now harmless material can be sent straight to the recycling facility at the Lippe Plant to produce electricity and steam.

Thanks to this procedure, around 5,400 tonnes of hospital waste are currently being used to produce sufficient electricity for around 4,000 4-person households every year. Ulrich Hankeln, managing director of REMONDIS Medison, stressed: "Our REKOMED system is an attractive offering for hospitals and for a large part of their highly infectious waste. Besides having their refuse handled in line with all rules and regulations and receiving all waste management documents, they are also provided with an additional tool at standard market conditions that supplies energy and improves their sustainability footprint."

### A safe system, a positive energy footprint

The sterilisation procedure and the transformation of the materials from hazardous to harmless takes place in a fully automated enclosed system using a vacuum steam sterilisation process: the bins collected from the hospitals and their waste contents are first cut up in the enclosed system. A screw conveyor then transports the cut up material into the two process tubes. The next step is to remove all the air from the tube so that the actual sterilisation procedure can begin. The material in the process tube is heated up with direct steam.

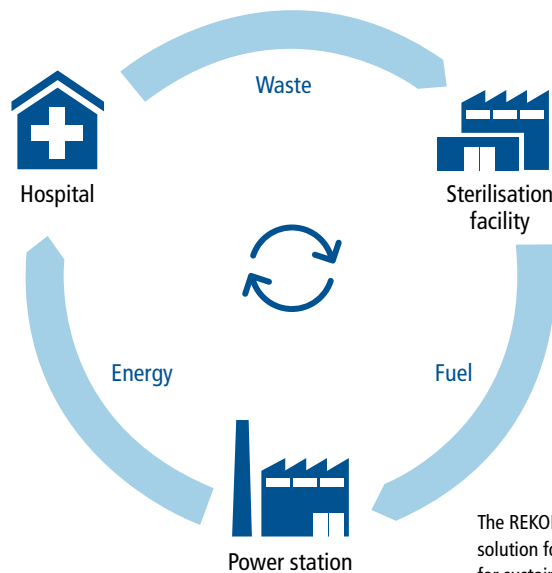




State-of-the-art technology packed up safely. The whole facility has been designed so that the material remains in a fully enclosed system from the moment the bins are handed over all the way through to the final sterilisation stage

With the hot steam reaching a temperature of 138°C, it is able to kill off the infectious bacteria, germs, viruses and spores. Sterilised in this way, the material can be sent for full thermal treatment. At no stage do the staff come into contact with the material. The system is fully encapsulated and the two units can each handle 500kg per hour. The actual process takes around sixty minutes. Using this system improves the hospitals' carbon footprint. Which is why Ulrich Hankeln underlined REKOMED's growth potential and its competitive advantage: "Our offering can be used across the whole of the country. We believe that demand will grow as the subject of sustainability becomes ever more important for hospitals – a development that is, in particular, being driven by the owners."

**Turning infectious waste into climate-friendly energy**



The REKOMED process is a perfect solution for hospitals that are looking for sustainable ways to manage their waste

**"Our REKOMED system is an attractive offering for hospitals and for a large part of their highly infectious waste."**

Ulrich Hankeln, Managing Director of REMONDIS Medison



# The energy transition in practice

GENERATING ENERGY FROM ALTERNATIVE SOURCES, REMONDIS' LIPPE PLANT COVERS ITS OWN DEMANDS AS WELL AS THOSE OF SEVERAL THOUSAND HOUSEHOLDS

Anyone taking steps to curb climate change and conserve natural resources will also prefer to use exemplary energy supply solutions. REMONDIS' Lippe Plant is a perfect example of this. Just like the network of plants and facilities located at this recycling centre, there is a smart system managing energy supply that creates synergies and adds value. At its heart: the plant-operated facilities that generate energy from non-recyclable waste.



Generating energy from waste reduces the demand for fossil fuels making it a future-proof system that helps to conserve natural resources and curb climate change

A whole range of processing facilities transform large volumes of waste into valuable materials at REMONDIS' Lippe Plant, Europe's largest industrial recycling centre. Around 900,000 tonnes of recycled products leave the site every year – from high quality plastic pellets, to certified compost, all the way through to environmentally friendly biodiesel. Looking at its operations from a sustainable point of view, these activities ensure that substantial quantities of natural resources are conserved and that carbon emissions are cut by around 488,000 tonnes year on year.

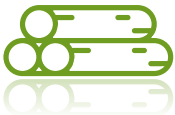
## Producing energy with fluidised-bed combustion

Every year, the Lippe Plant requires 114,600 megawatt hours of energy and most of this is supplied by the site's own fluidised-bed power station. This power station used to serve an aluminium plant and was originally designed to be fired with hard coal. Nowadays, it supplies the whole of the Lippe Plant with electricity, heat (in the form of steam) and compressed air – produced using environmentally friendly means, i.e. thermally treating non-recyclable waste. Some of the input materials come from the recycling centre itself, for example, residue from the healthcare waste sterilisation facility. The majority, however, is sent to the Lippe Plant from external businesses and ranges from sewage sludge, to filter earths, all the way through to liquid industrial waste. The power station has a variety of facilities, including silos, tanks and underground bunkers, so that it can accept and store the different types of waste before they are transferred for incineration.

## Electricity produced from biomass

A further integral component of the site's energy concept is generating electricity at its biomass-fired power plant. Here,

too, some of the input material comes from the site's facilities, including the timber processing plant, the composting plant and the earthworks. Once again, though, the majority of the source material is old non-recyclable wood delivered to the Lippe Plant, such as wood from bulky waste collections. All of the electricity produced by the biomass-fired power plant is fed into the grid and is sufficient to cover the requirements of 40,000 households. The Lippe Plant also has a biogas plant and adjacent combined heat and power units that transform the biogas into electricity. This energy is also fed into the grid. All in all, REMONDIS' two power stations and its biogas plant supply 222,300 megawatt hours of steam and electricity to external customers every year.



Incinerating old wood is carbon-neutral – making it a source of green energy





A complex energy supply network has been set up throughout the Lippe Plant and this is operated by REMONDIS itself. Top priority is given here to ensuring that there are always sufficient and secure supplies of energy available so that the recycling facilities can always be run as and when required. The electricity network alone consists of a 72-kilometre-long medium-voltage network and a ca. 50-kilometre-long low-voltage network – plus 11 integrated medium-voltage substations, 50 transformers and 63 low-voltage main distributors.

### Safety certificate confirms high standards

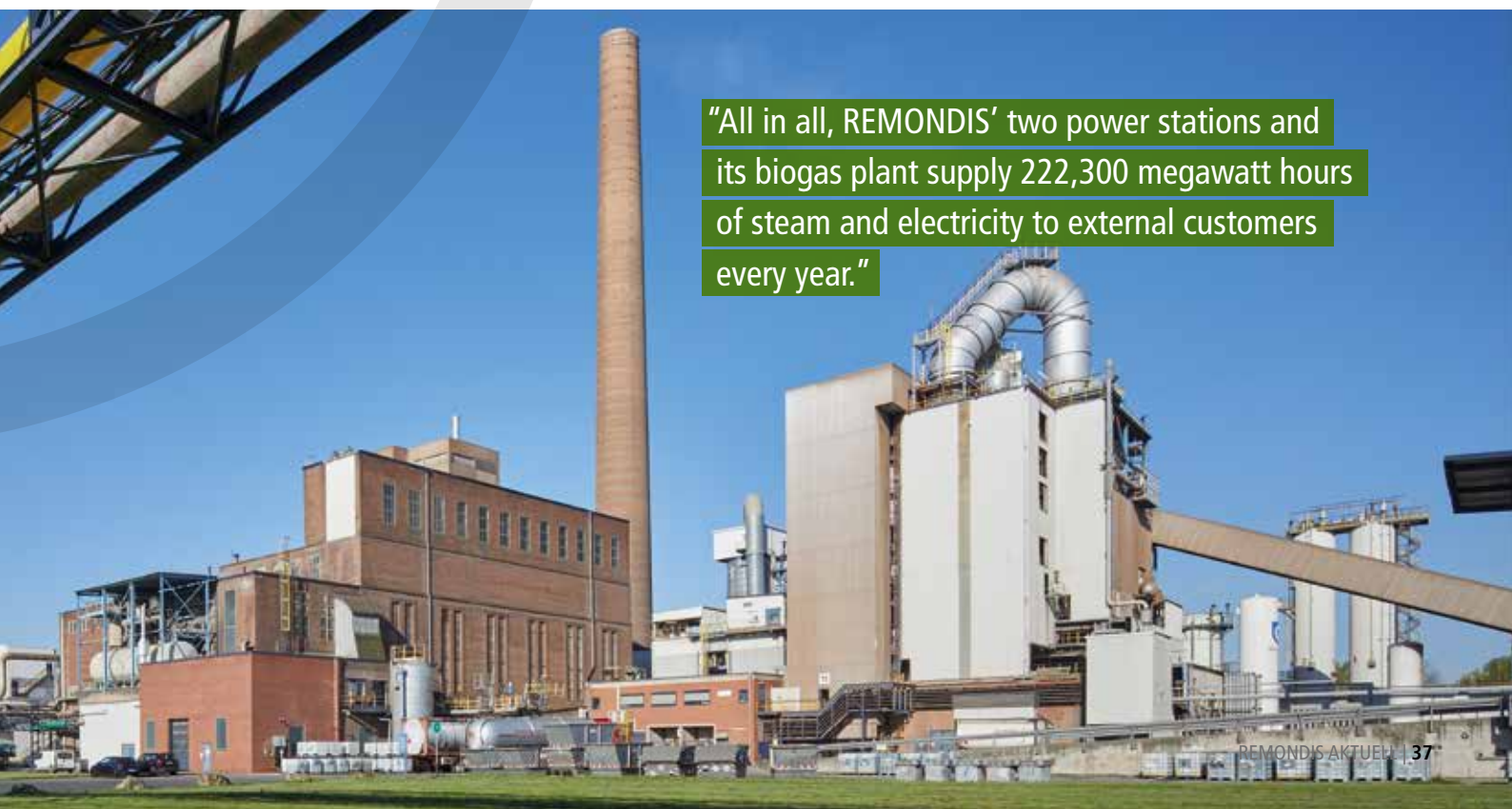
Even though the Lippe Plant is, for the most part, energy self-sufficient, it also needs natural gas – especially when its own power stations have to be shut down so they can be inspected. As is the case with all the networks, the site's natural gas network is also run by REMONDIS Production. This company, which is responsible for administration and facility management at the recycling centre, receives the natural gas at a transfer station, reduces its pressure to the required operating pressure levels and then directs it through the site's 5.6-kilometre-long natural gas network to the various facilities.



REMONDIS has set up a technical safety management system for handling natural gas at the Lippe Plant and this year it had it checked and certified by the DVGW, a recognised standardisation body for the gas and water industry. During their audit, the DVGW experts examined all of the system's processes as well as the personnel, technical and organisational structures. This showed that all technical rules, statutory regulations and generally recognised codes of practice were being met. Further proof, therefore, of the Lippe Plant's high quality and safety standards and the perfect implementation of an energy concept that unites resource conservation and climate action with energy security.

Heinz Esser, Managing Director of the DVGW's regional NRW Group, handing over the certificate to Silvio Löderbusch, Managing Director of REMONDIS Production, and Karsten Schwalke, Technical Safety Officer at the company (from left to right)

"All in all, REMONDIS' two power stations and its biogas plant supply 222,300 megawatt hours of steam and electricity to external customers every year."



# Working below deck

BUCHEN AND REYM PERFORM THE COMPLEX TASK OF CLEANING A BARGE'S TANKS AS PART OF A CROSS-BORDER PROJECT

Internationality is not only an advantage when it comes to production. Cross-border collaboration within the industrial cleaning sector also generates some interesting opportunities for customers. Indeed, there are customer benefits in practically every area of this business, even in the very specialist field of ship cleaning. As was the case with a barge that stopped off at REYM in the Netherlands and BUCHEN in Germany.

**BUCHEN®**

WORKING FOR THE FUTURE

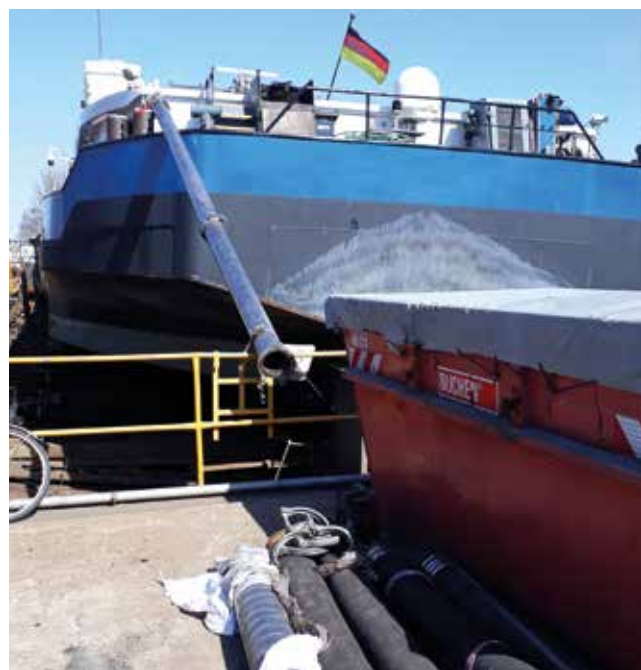
This 110-metre-long and a good eleven-metre-wide ship transports goods from all around the world and is equipped with tanks for storing oil and transporting by-products of coke manufacture. It needed to travel to two separate ports to have its tanks cleaned. The work, though, was performed by one company – with the two REMONDIS subsidiaries splitting up the tasks between them and ensuring the processes were dovetailed perfectly so that no time was lost.

REYM's team of Dutch and German cleaning specialists cleaned the ship's four oil tanks at Delfzijl industrial harbour. The work, however, was not carried out in the shipyard itself but on the water next to a dyke. This meant that REYM had to prepare the mooring in advance and have it approved by the relevant authorities before it could be used.

The actual cleaning work had to be completely emission free and performed in line with strict safety standards. The industrial cleaning experts' first task involved removing any gas from the tanks and burning it off on site using a combustion chamber. They then moved in to clean the tank walls with high pressure water jetting technology, which was connected to an upstream heater so that the water could be heated up to 50°C.



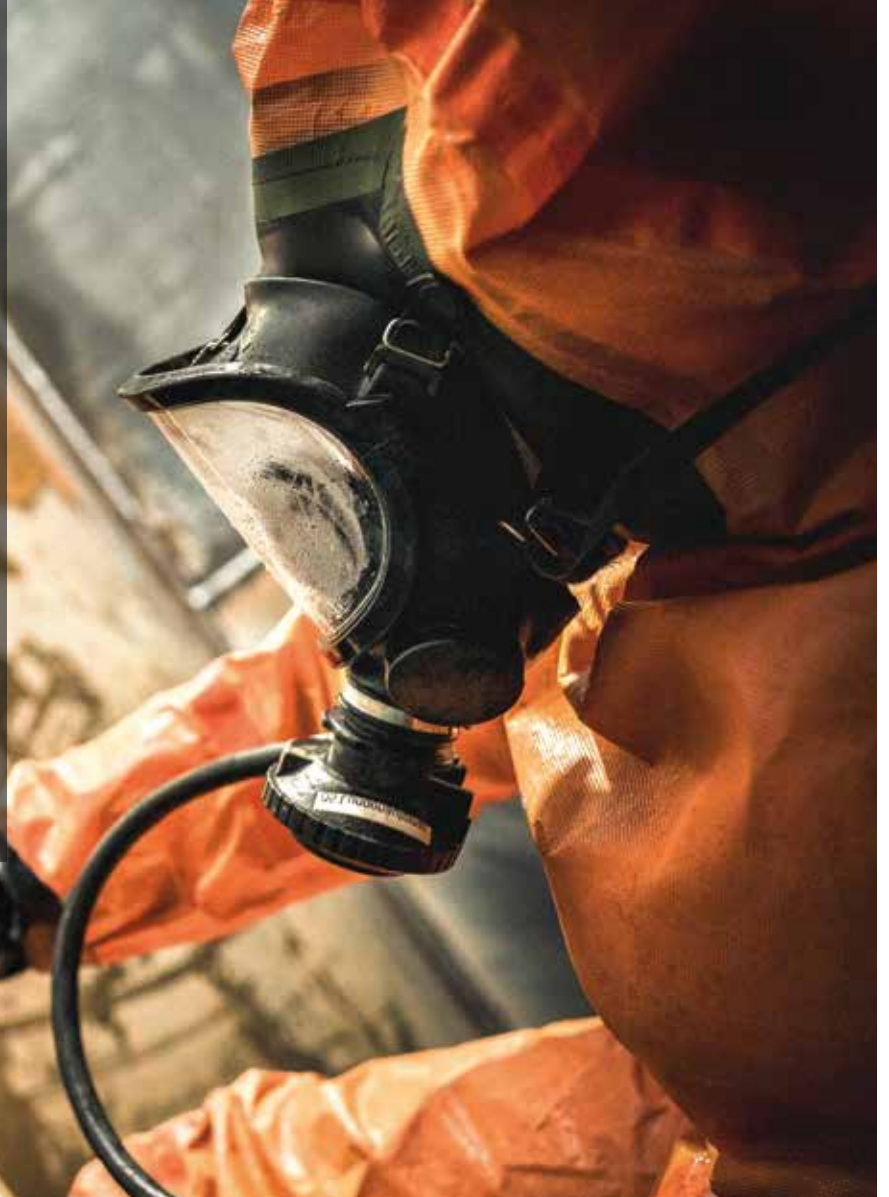
This Dutch-German collaboration project in Delfzijl was planned and coordinated by REYM's subsidiary in Emstek, a town situated near the German city of Cloppenburg





### Cleaning a ship's tanks – a task with some unusual features

The same is true for the shipping industry: a shut-down is lost time. When a cargo ship needs to have work done on it at a port, then this must be completed quickly. There are a number of factors that make this a more difficult task. On the one hand, companies have less time to prepare as a ship's exact arrival time is not known until a short time before. What's more, the equipment cannot be brought in until the last moment as there is little space available at ports and shipyards. On top of this, automated tank-cleaning processes can rarely be deployed. With the entrances to the tanks being so narrow, it is simply not possible to use large pieces of equipment. Focus is, therefore, put on manual work that involves the operatives entering the storage tanks wearing hazmat suits and respiratory protective equipment.



The whole cleaning process was performed using a fully enclosed system with all the residue generated by the work removed and temporarily stored. The product was then returned to the customer in a heated tank so that it could be reused. As soon as the tasks had been completed, the barge then set off for Germany to travel to BUCHEN UmweltService and Cologne-Deutz Shipyard located in the east of Cologne-Mülheim Harbour.

Once the ship reached the port in Cologne, it was placed on the slipway. With the help of the technical equipment that had been set up in advance, the BUCHEN experts climbed into the two 10mx10m tanks. There they used hand-held hammers to remove the hardened product residue. A job similar to that carried out in mines and one that required great care and skill as the hot-water pipes from the tanks' panel heating system were hidden in the product residue.

The lumps of residue were then placed into plastic drums and pulled out of the tanks through the narrow manway with an electric chain hoist. The shipyard's portal crane was then deployed to transfer the drums to the waiting skips. Any remaining residue and dust in the tanks were removed by BUCHEN using suction equipment and stored in vacuum skips. Other tasks that BUCHEN was commissioned to do during this project included cleaning the 5-metre-high ceilings, removing any product residue and inspecting the tank's pipe network with CCTV.

Together, the two REMONDIS Group companies removed several tonnes of product residue from the ships: REYM 159 tonnes and BUCHEN a further 135 tonnes. Thanks to this project, the barge was able to set off with clean tanks that could, once again, be used to their maximum capacity.

The barge cleaned by REYM and BUCHEN in this joint project was 110 metres long and a good eleven metres wide



# Services dedicated to wind energy

XERVON WIND SUPPORTS THE SUSTAINABLE PRODUCTION OF ELECTRICITY ON LAND AND AT SEA

**XERVON®**

WORKING FOR THE FUTURE

This summer, REMONDIS began serving the wind energy sector. Its newly founded company XERVON Wind offers a full range of highly specialised services that cover the whole life cycle of onshore and offshore wind turbines. Combined with the Group's portfolio, these range from installing the wind turbines, to ensuring they run safely and reliably, all the way through to dismantling and recycling them.



XERVON and its sister company BUCHEN make up the REMONDIS Group's 'services' division

Being part of the XERVON family, XERVON Wind is also able to call on the expertise of a Group that serves a whole range of industrial and business sectors and is one of the world's leading providers of technical services. One of the reasons for the Group's success is its in-depth know-how of the different sectors – something that allows XERVON to draw up bespoke industry-specific solutions to meet their customers' exact requirements. A successful formula that XERVON Wind will also be making the most of.

## Technical services for each and every need

XERVON Wind's operational business links maintenance and plant construction expertise with the specific set-up of the wind energy sector. And, by doing so, it plays a direct role in helping to increase turbine availability, enhance electricity output and extend the service life of the wind turbines. The individual services delivered by XERVON Wind cover all relevant areas. These include general servicing and maintenance work as well as repairs, engineering projects and complex specialist tasks such as replacing main components and performing retrofits to boost performance.

By collaborating with other REMONDIS Group companies, it is also able to cover additional areas – for example recycling wind turbine components that have reached the end of their service life, in particular the towers, nacelles and gearboxes. Additional options are available as well thanks to its cooperation with REMONDIS' sister company Rhenus Logistics, which delivers supplies to offshore wind farms and transports components and crews to the platforms.

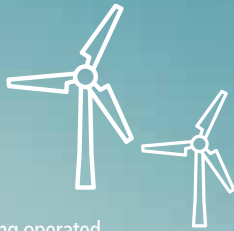
## First projects at sea

There has already been great interest in XERVON Wind's services. The company had its first projects just a few days after it officially began operating. Its first two assignments saw it travelling to offshore wind farms with 6MW wind turbines in Germany's Exclusive Economic Zone in the North Sea, i.e. in the area of water off the German coast. Further offshore projects soon followed as did maintenance tasks for onshore wind turbines.

Over

31,100

wind turbines are currently being operated in Germany



“Companies all around the world benefit from the REMONDIS Group’s services. Delivering our expertise to the wind energy sector is a strategic addition to our portfolio that fits in perfectly with our operations and once again underlines what REMONDIS is all about: working tirelessly for a sustainable future.”

Thomas Breitkopf, Board Member at REMONDIS SE & Co. KG

There are currently around 31,000 onshore and offshore wind turbines in Germany. According to the plans set out in the EEG 2021 [Renewable Energy Sources Act], Germany’s wind power capacities should have increased from the current 55,000 MW to 71,000 MW by 2030 – a growth of around 30%. This will require great effort from the industry, which can now turn to XERVON Wind for sustainable support.

#### Helping safeguard supply security

XERVON Wind’s activities are a further component in the REMONDIS Group’s portfolio, which is geared towards curbing climate change and protecting natural resources. This winter has shown just how important it is to contribute towards having a sustainable supply of energy. The upsurge in economic activity around the world following the coronavirus lockdowns has led to a global shortage of raw materials – something that has also had a major impact on the energy sector.

This high demand coupled with short supplies has pushed up electricity, gas and fuel prices to record levels. With this in mind, reinforcing renewable energies is not only contributing towards ensuring the energy transition and climate neutrality are a success but also towards decreasing dependency on global markets.



Efficient operations and the best possible electricity output: XERVON Wind focuses on the fundamentals to ensure wind energy can be successfully produced

# On a powder keg

HOW BUCHEN MADE A VILLAGE ALONG GERMANY'S SOUTHERN WINE ROUTE SAFE AGAIN

**BUCHEN**<sup>®</sup>

WORKING FOR THE FUTURE

Listed timber-framed buildings, well-known winegrowers and picturesque vineyards: Ilbesheim, a winemaking village in the Landau-Land district with 1,200 inhabitants, is a haven of tranquillity. At least, it normally is. Places like Ilbesheim, however, can also suddenly find themselves facing exceptional circumstances that demand a rapid response, the highest of safety standards and even an evacuation.

The way it began was quite unspectacular. A former vineyard in the centre of the village was sold and the new owner wanted to tidy the place up. He discovered a 20l metal drum in one of the sheds that did not look right. Not only was it rusty but also – and more worryingly – the drum had leaked some of its contents, a yellow powder, and had a warning label that was still legible. The new owner reported this to the police, who involved the fire brigade, the public order office and the district's hazardous materials team.

It became clear in no time at all that the situation needed to be handled very carefully. The decades-old drum contained a pesticide that has been banned in Germany since 1960 and is not only toxic but also highly explosive when it crystallises. In the state it was in, the drum had an estimated explosive force of around 10 kilograms of TNT. Enough to cause major damage – even to solid steel structures – within a radius of 100 metres.

## Staying safe in critical environments

Jobs such as the one in Ilbesheim really underline the strength of BUCHEN's 'safety first' prerequisite. All areas of the Group are certified in accordance with exacting quality, safety and environmental standards. The employees also benefit from the advantages created by this system. Besides taking part in training courses and performing such tasks regularly, BUCHEN's operatives can rest assured that all individual steps of a project have been carefully thought through and all safety aspects taken into account. Additional protection is provided by detailed risk assessments, project-related safety instructions and, last but by no means least, the company's own workshops that ensure that all equipment and protective gear are always kept in an excellent condition.





An extensive range of safety equipment, including a 4-chamber, double-door system, had to be installed so the toxic drum could be removed

They were ready to move in and remove the drum in July. First, 225 Ilbesheim residents had to leave their homes. The control centre was then set up and 80 specialist rescue operatives brought in to lend a hand if needed.

Supported by their team leader, two BUCHEN employees entered the shed to make the drum safe – experienced, safety-conscious operatives, who carry out such tasks as part of their everyday job. Wearing respiratory protective equipment and hazmat suits, they set up a sprinkler system and sprayed the drum with the lye, which immediately halted the risk of explosion. Calmly and with a level head, the well-practised team covered the whole of the rusty drum in a protective film to prevent it falling apart. As if in slow motion, the drum was then lifted up with a hoist and very carefully placed in a 120l salvage drum. The staff then filled this salvage drum with binding agents before pouring the epoxy resin into it, a step that had been approved by the Ministry of the Environment in Mainz.

The setting resin firmly joined the two drums together so that it was impossible for the toxic pesticide to escape. The job was successfully completed within around four hours. And the Ilbesheim residents could breathe easy again. The people who had been evacuated were able to return to their houses earlier than expected. The village was safe once again.

Which meant the village's tranquillity was disturbed for a while. The drum had to be made safe as quickly and as securely as possible – and this had to be done by specialists. A call was put through to BUCHEN UmweltService who set everything that had to be done in motion. BUCHEN's experts first had to plan the work meticulously. Taking all the potential risks and specific circumstances into account, they drew up a concept to remove and dispose of the drum. At the centre of their plan: an alkaline solution and a special epoxy resin that did not generate heat. At the same time, BUCHEN applied for all necessary permits, transported the equipment they needed to the vineyard and prepared the space to meet the requirements for performing work in a contaminated area.



Once the resin was completely set, BUCHEN took the drum to TRV Wesseling, a REMONDIS associated company that thermally treats hazardous waste



# Australia: regions and industry turn to REMONDIS Aqua

HOW TO CONQUER MARKETS: DEPENDABILITY, EXPERIENCE, SYNERGIES AND A TEAM FULL OF ENERGY

This success story began with a plan and the subsequent foundation of a firm in Lünen, a town situated in the German region of Westphalia, before heading to the other end of the world. Having begun its operations in Australia, REMONDIS Aqua has now been commissioned with a number of key projects in the country.

The Gladstone region, which surrounds the town of Gladstone with its 62,000 local residents, has opted, for example, to make the most of REMONDIS Aqua's international pioneering role. The Regional Council recently commissioned these water and wastewater specialists to operate and maintain two wastewater treatment plants. An exciting and challenging project in a region that is home to many businesses operating in the heavy industry and transport sectors.

Sebastian Weil, General Manager of REMONDIS Aqua Australia, believes the Aurizon and Gladstone contracts represent an important business breakthrough:

"We are global leaders when it comes to delivering efficient, innovative and high quality wastewater treatment. Our customers benefit from the fact that REMONDIS is able to deliver both water management and recycling services. We have the expertise and the resources to offer our customers exactly what they need while still putting sustainability and cost efficiency at the top of the list."

## A flagship project for other towns

At the heart of this new contract are two wastewater treatment plants. While innovative technology (so-called membrane bio reactors) is being deployed, they are no longer the newest of plants. This is not a problem for REMONDIS Aqua's experts – on the contrary: they took up their work in September and are now introducing measures to consolidate both the plants' infrastructure and operating costs.

They have begun by professionally servicing both wastewater treatment plants. Their next step will then be to upgrade them over the coming years to extend their operating life and sustainably cut costs. Something that shall benefit both the town and its local residents. And, of course, the company shall continue to deliver a high quality service – helping to conserve water supplies and natural resources and protect the environment.







In addition to this, the local team of experts are in charge of a further important installation: a stand-alone water recycling facility. This unit produces recycled water for washing vehicles using a process that complies with the stringent standards set out in law. This law, for example, stipulates that all biologically hazardous solid material, that may contain invasive weeds and thus pose a threat to the region's fauna, must be completely removed. By the way, a local REMONDIS team is also responsible for ensuring this organic waste is treated safely. This team recently extended its partnership with a major raw material firm to take over all waste management tasks at Boyne's aluminium smelting plants.

**Waste management synergies**

Aurizon, Australia's largest rail logistics firm, is also making the most of synergies between the waste management and water business. REMONDIS has been collaborating with the company for over ten years – handling a whole variety of residual materials and providing recycling services across the whole of the country.

Aurizon has now brought REMONDIS Aqua on board as well. The water supply and wastewater treatment specialists have been given the task of operating, servicing and maintaining Aurizon's sewage and pollution treatment plants at Toowoomba, Gladstone, Rockhampton, Mackay, Bowen and Townsville over the coming years.

Furthermore, REMONDIS Aqua is also in charge of operating Aurizon's various pumping stations, water storage facilities and oil separators in the state of Queensland as well as of continuously testing water quality at and modernising and expanding the sewage treatment plants.

A story of growth at the other end of the world – and a story that certainly has more chapters to come.

Queensland – Australia's second-largest state following Western Australia – is home to around 4.7 million people and covers an area five times the size of Germany



Thomas Hallam (left), who is in charge of operations and contract management at the wastewater treatment plants in Gladstone, and Daniel Lewis, who works in operations, are a strong team. They meet regularly to discuss and plan their work – such as here at the water processing plant in Aldoga



# Smart flood protection

EARLY WARNING SYSTEMS MAKE REGIONS SAFER – THANKS TO THE INTERNET OF THINGS

The low pressure system named "Alfred" led to Goslar, a city in the German state of Lower Saxony, being hit by heavy rain and flash floods in July 2017. The normally harmless River Abzucht broke its banks, flooded the old city, destroyed bridges and damaged houses and streets in the town, which is home to 40,000 people

**Many people in Germany are still in a state of shock: a period of constant heavy rainfall this summer caused severe flooding, people lost their lives, houses were swept away. The lives of tens of thousands of local residents were turned completely upside down within just a few hours. Even the people who "only" had to deal with flooded basements still look at the skies with trepidation whenever there is persistent rain.**

The number of heavy rainfall events has increased by around 20% since the middle of the 1980s. With the weather station network in Germany being fairly dispersed, it is still not possible for rainfall to be detected early in small geographical areas. This, in turn, makes it very difficult to predict flooding.

The so-called Internet of Things (IoT) – and low power sensors in particular – could help make life safer for people living in flood-prone areas: new early warning systems can be created by using data from a variety of measuring devices (such as ultrasound sensors and rain gauges) that are directly connected to the internet. Interfaces linking the system to meteorological databases can further improve the performance of the early warning systems.

As a result, these new flood management systems can monitor the water levels of rivers, sewers and flood-control reservoirs in real time, detect critical conditions quickly and reliably and adjust the controls of the impacted water facilities accordingly. By doing so, they play a key role in helping to prevent flood damage and initiate protective measures.

## Energy-efficient sensors transmit data from buildings and shafts

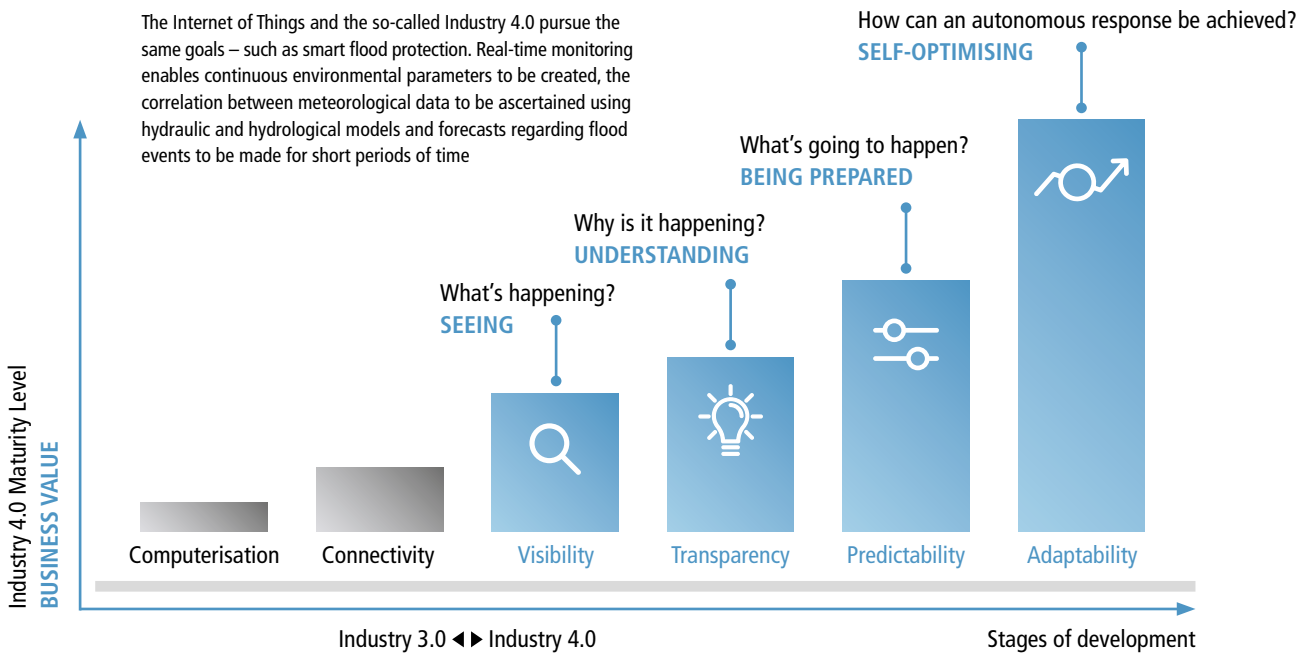
REMONDIS Aqua also deploys this technology. Be it in the south of Lower Saxony, at Lake Constance or in the Lausitz region: rain sensors and sensors in sewers and town drainage systems gather data that is fed into an early warning system on the Internet of Things helping people to forecast potential flooding.

The company's branch in Goslar, a city situated in the Harz region, also uses data recorded in the town's complex drainage network to help manage the system. The team can even optimise the capacity of the flood-control reservoirs for up to three days in advance when faced with extreme conditions. The IoT technology, though, can also benefit areas of water management that are less risk-prone – such as in the following case:

### What is the 'IoT'?

The Internet of Things encompasses all devices that are connected to the internet. Physical objects are depicted and connected to one another virtually. As a result, they can perform various tasks for their owner. The data situation is more transparent as the devices are able to communicate with each other, which enables better decisions to be made. The IoT is used in a whole range of areas – from the provision of general information, to simplified visualisation, all the way through to automated warning and emergency functions.

The Internet of Things and the so-called Industry 4.0 pursue the same goals – such as smart flood protection. Real-time monitoring enables continuous environmental parameters to be created, the correlation between meteorological data to be ascertained using hydraulic and hydrological models and forecasts regarding flood events to be made for short periods of time



Data from the sewer conduits help the company in Lindau (Lake Constance) to detect when water has been discharged into the sewer network by third parties. This information helps prevent the system from being overloaded in the future and saves energy. What's more, the data can also be used to calculate what system capacity will be required in the future. By doing so, sewer simulation models can be precisely calibrated making it easier to plan and carry out important building work on the town's infrastructure.

The decentralised pumping systems operated by Wasserverband Lausitz Betriebsführungsgesellschaft (aka WAL-Betrieb) are also connected to the internet. As a result, the company's staff do not need to travel long distances to inspect the pumps in person so often – and fewer trips mean fewer emissions helping to protect the environment and curb climate change.

REMONDIS Aqua's IoT projects help to protect people against floods and drive forward digitisation in the water management sector.



The water levels of rivers, sewers and flood-control reservoirs are fed into the flood management systems in real time using low power sensors – as is the case here outside Goslar

#### How IoT technology benefits water management:

- Processes are more efficient because the plants, facilities and pipes can be monitored constantly and the data generated analysed
- The interconnected logistics allows transport routes to be planned in detail helping to conserve natural resources
- The sensors and their data make water and wastewater infrastructure more transparent, allow leaks, pump outages, electrical short circuits and supply bottlenecks to be detected much earlier and even for them to be predicted in advance
- The sensors, which can be installed in a whole variety of locations, transmit their environmental data using, for example, LoRaWAN radio technology. This has a large operating range, transmits from buildings and shafts and is energy efficient, good value and secure thanks to end-to-end encryption



# Flood disaster: “It was a given that we would help”

THE FLOODED REGIONS NEEDED HELP QUICKLY, WITHOUT RED TAPE – THE EURAWASSER GROUP’S TEAM TRAVELLED THERE STRAIGHT AWAY

Torrents of water swept through Ahrweiler and other towns in the north of Rhineland-Palatinate and the south of North Rhine-Westphalia in the middle of July. Many regions were flooded, houses filled with water, buildings collapsed and, tragically, many people lost their lives. On top of this, supply and waste management systems stopped working – including the water and wastewater networks.



## Images that will never be forgotten

“I am a firefighter and have seen many bad things in the course of my work. But never on a scale like this,” commented Oliver Römer from EURAWASSER in Goslar, who was obviously still shocked by everything he had experienced. His colleague Ralf Zutz, an employee at EURAWASSER in Güstrow, is still clearly affected as well: “It’s practically impossible to put it into words. We saw some pretty bad things. It’ll take a while to come to terms with it.” WAL-Betrieb employee Marcus Schrade from Senftenberg agreed: “It’ll be hard to get the images out of my head.” Together with their colleagues, the three of them got down to work in Ahrweiler and the other towns with their ravaged homes and roads and badly damaged water, wastewater and electricity networks. For the most part working in twelve-hour shifts – with the suffering and distress of the flood victims in front of their eyes.

The water experts worked late into the evening. And they didn’t stop afterwards either: WAL-Betrieb’s team in Senftenberg collected donations – organised by the works council – and handed them over to the badly affected District of Grafschaft

As far as the EURAWASSER Group’s experts were concerned, it went without saying that they would help wherever they could. Several of its subsidiaries from across the country immediately sent teams with vacuum/cleaning vehicles and pumps to the regions impacted by the floods where they provided emergency assistance removing the water and mud from the sewer pipes and cellars. All in all, the EURAWASSER volunteers spent around a fortnight helping out.

Their colleagues spent eight days travelling around Ahrweiler and the neighbouring villages in their vacuum/cleaning trucks to remove the mud, debris and refuse from the sewers. Among them Maik Nehls from Güstrow: “So that the residents could at least start using their toilets again,” he said. The sewers were “filled to the brim. The floods had swept away the manhole covers and all the rubble had been washed into the pipes.” Even the shafts were completely blocked – and some of them even broken beyond repair.



United in the battle against the flood disaster, several EURAWASSER subsidiaries sent staff to the affected regions. All with one and the same goal: to help the flood victims wherever they could



**“I am a firefighter and have seen many bad things in the course of my work. But never on a scale like this.”**

Oliver Römer, EURAWASSER Goslar

### Some small successes & a big thank you

“Together with the others, we managed to unblock the sewer pipes in a village close to Ahrweiler,” Maik Nehls and his colleague Ralf Zutz were pleased to say when reporting on one of the many small successes they had achieved while working on the sewer network. It was obvious just how important the EURAWASSER team’s work had been when the weather took a turn for the worse again just a few days later. “It actually began raining again but the water was able to flow through the pipes,” commented Oliver Römer from Goslar, describing one of the many positive moments he had experienced while clearing up the devastation caused by the floods.

“It goes without saying that we’ll help out when towns face such disasters,” explained Robert Ristow, managing director of EURAWASSER. “We are so proud of our employees who selflessly travelled to the areas to help out – often pushing themselves to the point of exhaustion.”

Ralf Zutz and Maik Nehls from EURAWASSER’s branch in Güstrow after a twelve-hour shift helping out in the flood-impacted region. They used their vacuum/cleaning truck to remove the mud and debris from the sewers in and around Ahrweiler

The teams often found themselves being thanked by the flood victims. Even though everyone is well aware that there is still a long way to go before the towns and villages affected will get their lives back to normal.





# Taking care of each other

THOMAS KUSSIN FINDS A SECURE JOB IN BRAMSCHÉ – INCLUSION IN PRACTICE

Team support is the name of the game here: employee Thomas Kussin (l.) and branch manager Christian Deing

**“What I really like here is the way everyone looks out for each other.”** Thomas Kussin is proud when he talks about his work. Proud to be part of the team. REMONDIS Industrie Service GmbH in Bramsche has been employing people with disabilities since 2018 and has also been presented with the Lower Saxony Social Award for its inclusive work. As far as Thomas is concerned, the biggest award for him is having found a job in a friendly environment that offers him long-term prospects.

Before joining REMONDIS in 2019, Thomas had tried out many different jobs. At these other places, however, he did not get the support he needed and his hard work was often not appreciated. As the 45-year-old is only able to use one of his hands, he was often told that he was too slow. “I was constantly having to stand up for myself,” he said talking about his past. All that, though, is now behind him.

In Bramsche, Thomas (everyone calls him Tommy at REMONDIS) works in the sorting facility at the aerosol can recycling facility. He very quickly realised just how important his work is for the circular economy – as aerosol cans and gas cartridges can only be recycled if they are separated according to type. A multi-stage process is used at the plant, therefore, to separate the aluminium and tinplate as well as the propellants and liquids. The propellants are then used as a source of energy and the residual liquids are sent on for thermal treatment.

**“We hope that we will gain the attention of other businesses and that they, too, will start looking at inclusion.”**

Christian Deing, Branch Manager  
at REMONDIS Industrie Service in Bramsche

A special pallet lifter was brought in so that Thomas could work one-handed. And the car-sharing programme has also helped make things easier. No one is left behind here.

## **Inclusion – a win-win situation**

Five employees with a learning or physical disability currently work in Bramsche and together they cover one full-time job. A win-win situation: the company no longer needs to use a temping agency and the often socially disadvantaged employees are given the opportunity to have an inclusion job and become financially independent.

For the most part, they have Uwe Haake to thank for this opportunity. Formerly the REMONDIS Group’s disability officer (he retired in June), he personally took a great interest in this project. Haake himself was in charge of introducing inclusion into the company’s ongoing operations, for making all parties aware of what was involved and for getting institutions in the district on board, such as the District of Osnabrück’s social committee and specialist integration office. “We hope that we will gain the attention of other businesses and that they, too, will start looking at inclusion,” commented branch manager Christian Deing.



# IMPRESSIONS



◀ With appropriate hygiene measures in place, the Honorary Chairman of the Supervisory Board Norbert Rethmann welcomed the new apprentices to the company. A group of ca. 40 apprentices from a variety of courses were invited to the event to represent this year's new intakes



◀ SPD politicians Michael Thews (left) and Florian Pronold (2<sup>nd</sup> left) spoke to REMONDIS representatives about how the circular economy can help curb climate change and what political course the future government coalition must set

Herwart Wilms, REMONDIS ▶ Managing Director, took part in an alumni meeting of the IESE Business School in Madrid to discuss what conditions were needed to create a genuine circular economy. The conclusion: a real circular economy does not begin with waste but with products



▲ Correctly sorting household waste is child's play – as was shown by the ca. 200 children from primary schools in and around Iserlohn during the Children's Climate Day



REMONDIS Industrie Service GmbH in Bramsche was presented with the Lower Saxony ▶ Social Award for its inclusion work. This can largely be put down to Uwe Haake, the REMONDIS Group's former disability officer



▲ Wasserverband Lausitz Betriebsführungs GmbH (WAL-Betrieb) is celebrating its 15<sup>th</sup> anniversary. WAL-Betrieb has been operating WAL Wasserverband Lausitz's plants and facilities since 2006. Thomas Förl, Managing Director of WAL-Betrieb, and Dr Roland Socher, Chairman of the Lausitz Water Association, have been delighted with the business' many milestones – including the ENSI Award it was presented with recently, which recognises regional climate action measures implemented by the water management sector





## Recycled raw materials are better than raw materials

The best choice for our future: recycled raw materials are not only raw materials, they are often much better than those from primary sources. Why? Because they are of an excellent quality, require less energy and space to produce, are carbon neutral and can be found here on our home market. Recycled raw materials help grow our economy and ensure we continue to have a world worth living in.