

BEST PRACTICE FOR THE ENVIRONMENT

Mechanical recycling of PVC construction products



Selected projects from 2016 to 2018

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preface

Dear Readers

Product liability not only covers the areas of security, health and quality, but also the protection of the environment. This is why the manufacturers of PVC building products, such as windows, floor coverings, roofing membranes and pipes, have been setting up nationwide systems for mechanical recycling since the 1990s. This method is considered 'Best Practice' in waste disposal for several good reasons: since 2005, there has been a ban on the disposal of used construction components and other organic waste types in landfill - and this not only applies to PVC. These materials are required to be processed and recycled. The primary focus is on mechanical recycling in monitored closed-loop cycles, and this is easily possible for PVC construction products. Above and beyond this, mechanical recycling saves valuable resources and money.

Against this background, the AGPU (Arbeitsgemeinschaft PVC und Umwelt e.V.), Rewindo GmbH Window Recycling Service and the Association for the Recycling of PVC Floor Coverings (AgPR) initiated the 'Best Practice for the Environment' campaign in the summer of 2016. It is aimed at identifying and publishing information on reference projects in the areas of demolition, refurbishment and dismantling, which are, for example, aimed at reusing the PVC window frames and floor coverings that accumulate in the Rewindo or AgPR recycling systems. The initiative met with considerable agreement not only within the industry, but also among construction and housing associations, housing companies, the German Demolition Association (DA) and a number of window construction companies.

The focus of the 'Best Practice for the Environment' campaign, which is now, after two years, coming to an end, was on the new German federal states - but they are not the only ones because there are good examples all across Germany. This documentation is aimed at presenting several 'Best Practice' projects to you from various parts of Germany. Above and beyond this, its objective is to give you insights into the response that our campaign has received from associations and companies and from representatives of the daily and trade press. Come and read this presentation in order to be inspired for your own projects.



Thomas Hülsmann
Managing Director of
Arbeitsgemeinschaft PVC und
Umwelt e.V. (AGPU), Bonn



Michael Vetter
Managing Director of
Rewindo GmbH
Window Recycling Service, Bonn



Dr. Jochen Zimmermann
Managing Director of the
Association for the Recycling of
PVC Floor Coverings (AgPR), Marl

Best Practice for the Environment

For several years, housing and demolition companies have been proving to be environmentally conscious in their energy-efficient refurbishments or selective dismantling processes. These not only include measures to modernise the roofs, facades or heating systems, with the aim of saving energy or separating used construction materials properly; resource efficiency and sustainability have also increasingly been coming into focus. Recycling of construction materials in the sense of the German 'Kreislaufwirtschaftsgesetz' (Circular Economy Act) is beneficial to the environment and improves ecological credibility.

This is particularly obvious in the sector of PVC construction products, such as windows, floor coverings, roofing membranes and pipes. As early as in the 1990s, the manufacturers established effective mechanical recycling and reuse systems all across the country to meet the requirements of product liability. In recent years, these have been used for numerous refurbishment and dismantling projects under the motto of 'Best Practice for the Environment'.

The 'Best Practice for the Environment' campaign has identified exemplary projects in the German federal states of Saxony, Thuringia and Saxony-Anhalt and beyond in which PVC construction products have been recycled and reused within the framework of a construction project. We arranged appointments with representatives from the local press and trade media for selected projects.



Supporters

As early as in the run-up phase to the campaign, we were able to gain renowned supporters in the shape of associations, cooperatives, institutions, companies, the media and individuals. We would like to take this opportunity to extend our gratitude to the following supporters for their contributions to identifying suitable reference projects:

- Verband sächsischer Wohnungsgenossenschaften e.V., VSWG, Dresden (The Association of Saxon Housing Cooperatives)
- Hauptverband der Deutschen Bauindustrie e.V., (HDB), Berlin (Association of the German Construction Industry)
- Deutscher Abbruchverband e.V. (DA), Köln (German Demolition Association (DA), Cologne)
- VEKA Umwelttechnik GmbH, Hörselberg-Hainich
- Dekura GmbH, Höxter
- TMP Fenster + Türen, Bad Langensalza
- WERTBAU GmbH Fenster und Türen, Langenwetzendorf
- B & O Wohnungswirtschaft, Chemnitz
- Bauelemente Bau, Stuttgart
- Modernisierungs Magazin and others, Stuttgart

Campaign PVC Recycling



To save valuable resources, the European PVC industry has been managing the recycling of the most important PVC construction products. Mechanical recycling has been common practice in the PVC manufacturing and processing sectors for a long time. The bulk of the unmixed waste is reintroduced into the manufacturing process. The PVC industry has also developed a number of initiatives for re-using post-consumer waste. These have firmly established themselves on the market.

Used construction products, such as windows, floor coverings, roofing membranes and pipes, account for the majority of the PVC waste segment. Established collection systems and recycling plants are now available for this purpose, such as Rewindo GmbH Window Recycling Service, the Association for the Recycling of PVC Floor Coverings (AgPR), the ROOFCOLLECT roofing membrane recycling system, and the recycling system for PVC pipes operated by the German Kunststoffrohrverband e.V., KRV (Plastic Pipe Association).

Under the umbrella of the Campaign PVC Recycling (Aktion-PVC-Recycling), the above recycling initiatives have been joining forces with AgPR to ensure the material recycling of PVC construction products. Above and beyond this, you can find recycling offers for additional PVC products online in AGPU's PVC Recycling Finder.

www.aktion-pvc-recycling.de
www.pvcrecyclingfinder.de



Residential complex in Norderstedt after energy-efficient refurbishment



Window replacement in Norderstedt

Recycling of PVC floor coverings since 1990

The Association for the Recycling of PVC Floor Coverings (AgPR) collects used PVC floor coverings from demolition or renovation measures from all over Germany and - along with logistics partners - in several neighboring European countries. In doing so, it cooperates, in particular, with demolition companies that separate PVC construction products from the rest of the construction waste, based on the selective dismantling of building products, also termed 'Urban Mining'.

Since 1993, AgPR has been operating its own recycling plant in Troisdorf, Germany. In 2017, more than 2,500 tonnes of this construction material were recycled there. After other materials have been screened out, the incoming used PVC floor coverings are pro-

cessed into a finely ground powder based on a state-of-the-art technical process. If the material is suitable, it can then be easily reused for the manufacture of new PVC construction products.

The 'Best Practice' system in recycling PVC floor coverings started to establish contacts until Africa. A representative from a business start-up in Kenya visited the plant to learn about material recycling and how it works. What has been 'best practice' in terms of energy efficiency and sustainability for a long time in this country, might thus soon gain ground on the African continent, too.



Removal of used PVC floor coverings



Delivered used PVC floor coverings



The Troisdorf recycling plant



PVC powder in big bags

Mechanical recycling of PVC window frames

Along with its recycling partners, Rewindo GmbH Window Recycling Service ensures the logistical and technical implementation of the collection and reuse system. Using state-of-the-art recycling technology, these companies are able to recover virtually un-mixed PVC regranulates from used windows, roller shutters and doors.

The used plastic windows are collected in containers at the building site and are then taken to the recycling partners' factories by a lorry. There, the state-of-the-art and demanding recycling process is initiated in several steps. In a first step, the used PVC windows are shredded and cut into even smaller pieces. Afterwards, the waste is separated into metal, rubber, glass remnants and plastic based on various procedures. The plastics are then heated and pressed through a filter to screen out the very last foreign particles. The PVC regranulates thus recovered are finally used as a basic material for new plastic windows with a recycled core layer.

In 2017, more than 32,000 tonnes of PVC regranulates from used windows were recovered and reused by the factories of the Rewindo recycling companies. This is equivalent to approx. 1.8 million window units. The recycling rate is above 88 per cent.

Theoretically speaking, the recycling process can be repeated at least seven times without the beneficial physical properties of the PVC deteriorating. In this way, the Rewindo recycling system ensures resource efficiency and sustainability. Compared to energetic recovery of the waste material, the builder saves costs and, at the same time, makes a contribution to an eco-friendly materials cycle.

Mechanical recycling of PVC windows has been gaining particular importance since June 2005, when landfill sites were closed, among other things, for waste from building and construction sites. Only thermal use in waste incineration plants was still allowed. However, in most cases this type of waste disposal is expensive.



Removed PVC window frames



High tech applied at purification of the materials



Almost 100 per cent clean PVC regranulates

Nationwide support

The housing sector was happy to support the 'Best Practice' campaign because material recycling is very important to the circular economy. Against the background of life-cycle considerations, what is known as 'end of life' is also being taken into account, and this should be reuse. This is how we are increasingly approaching our objective of achieving an even larger number of closed materials cycles in the future.

Ingeborg Esser, Berlin
General Manager
Bundesverband deutscher Wohnungs- und Immobilienunternehmen e.V. (GdW)
(Association of German Housing and Property Companies)

The building and construction projects aimed at implementing the energy transition, the modernisation of the infrastructure, the protection of resources and the circular economy are great challenges to be faced by the German government. It is impossible to overcome these challenges without an efficient construction materials, construction and waste management sector. The economy needs regulations that advance the acceptance of secondary raw materials and recycling materials (also known as 'RC building materials'); regulations that do not make building and construction projects more expensive and that do not exacerbate the situation concerning the existing capacity bottlenecks on waste disposal sites. The 'Best Practice for the Environment' initiative has made an important contribution to achieving these objectives and has revealed opportunities for state-of-the-art recycling of PVC construction materials.

Grit Höfer, Leipzig, Branch Manager
Bauindustrieverband Sachsen/
Sachsen-Anhalt e.V.

With a good 25 years' practical experience, the mechanical recycling of PVC is one of the younger reuse systems for construction materials. Its closed-loop, eco-friendly material cycle and the results achieved have ensured its pole position in the PVC recycling sector. The reintroduction of the PVC building materials recovered during the dismantling process into the recycling process is beneficial to all those involved: the environment, the demolition company and the PVC industry alike. Our demolition companies are available as material suppliers for this purpose.

Andreas Pocha, Köln
Geschäftsführer
Deutscher Abbruchverband e.V.
(German Demolition Association)

Our raw material resources are finite. We need to do our utmost to ensure that our environment remains clean. This is something we not only owe our children and grandchildren, but to them in particular. In our capacity as company managers, it is our special duty to face this responsibility. We as TMP attach a lot of importance to using the resources available to us efficiently. For us, this issue is close to our heart. This is exactly the reason we are actively involved in the 'Best Practice for the Environment' campaign - with respect to our plastic windows and doors. We ensure resource efficiency and sustainability by reintroducing used products into the recycling process in accordance with the Closed Substance Cycle Waste Management Act. This is how we as an economy improve our ecological credibility. Our natural environment does not need any human beings, but we as human beings need our natural environment - this is something we should always bear in mind.

Bernhard Helbing, Bad Langensalza
Ex-President of the German Window and Facade Association (VFF), Frankfurt

Kick-off for 'best practice' in Thuringia

Large amounts of construction waste accrue during the energy-efficient refurbishment of residential and commercial buildings and during the dismantling process of property. These days, material separation and mechanical recycling are considered the best approach to eco-friendly disposal within largely closed material cycles. The campaign 'Best Practice for the Environment' was initiated against this background. The aim of the project, which focused on the German federal states of Saxony, Thuringia and Saxony-Anhalt, was to identify exemplary construction projects within which used PVC construction materials, such as windows or floor coverings, are recycled and reused. The joint initiative of the Arbeitsgemeinschaft PVC und Umwelt e.V. (AGPU), Rewindo GmbH Window Recycling Service and the Association for the Recycling of PVC Floor Coverings (AgPR) was happy to receive support from a number of institutions, associations and companies. The campaign was launched in Friederike's castle, Bad Langensalza, in the summer of 2016.

The initiative was supported by the 'Bundesverband deutscher Wohnungs- und Immobilienunternehmen (GdW), Berlin' (Association of German Housing and Property Companies); by the 'Verband Sächsischer Wohnungsgenossenschaften, VSWG' (Association of Saxon Housing Cooperatives); by the 'Hauptverband der Deutschen Bauindustrie e.V., (HDB), Berlin' (German Construction Industry); by the 'Deutscher Abbruchverband e.V. (DA), Köln' (German Demolition Association (DA)); by the 'Bauindustrieverband Sachsen/Sachsen-Anhalt e.V., Leipzig' (Association of the Construction Industry of Saxony/Saxony-Anhalt); by the 'Verband Fenster + Fassade, (VFF), Frankfurt am Main' (German Window and Facade Association); by 'B & O Wohnungswirtschaft, Chemnitz' (B & O Housing Industry), and by 'TMP Fenster + Türen, Bad Langensalza' (TMP Windows and Doors). The campaign also provided benefits for its members because mechanical recycling provides companies with bonus points for sustainable management in the public eye. In addition, the companies can save money because this system is less expensive than disposal in containers for mixed construction waste.

The considerable positive feedback given to 'Best Practice' proved that the PVC industry is on the right track by primarily focusing on mechanical recycling of PVC building materials. The first reuse systems for waste windows, roller shutters and doors and for floor coverings, plastic pipes and roofing membranes were launched as early as in the 1990s. Today, PVC recycling in the construction sector is an important element of VinylPlus®, the sustainability program of the European PVC industry.



Visit at VEKA Umwelttechnik



Friederike's castle, Bad Langensalza



Rewindo's Managing Director Michael Vetter presenting the campaign

ASB residential centre, Chemnitz

The refurbishment works on the residential centres of the local committee of the 'Arbeiter-Samariter-Bund, ASB' (Workers' Samaritan Federation) for Chemnitz and its surroundings had to be implemented particularly carefully in Chemnitz Rembrandtstrasse. This is because 32 severely physically disabled people live in the facility's 23 flats. Their daily routine was to be disturbed as little as possible by the construction works.

This was not an easy task because, besides works on the facade, the project involved replacing 205 used PVC windows with new thermally insulated plastic windows. During these works, each window was 'encased' in a protective dust cab. The develop-

pers, the Claus Höhn architect's office, which was in charge of planning the project, and the Liebert GmbH skilled trades business, which implemented the works, also took great care in disposing of the construction material.

Having been removed, the used windows were not taken to the waste incineration plant, but were mechanically recycled by VEKA Umwelttechnik GmbH (VEKA Environmental Technology) in Thuringia and then reused as recycled windows in other places later.



Removing windows in Chemnitz



Used PVC windows ready for transport



Construction workers and home managers seem satisfied



Energy-efficient refurbishment of the ASB home

Selective dismantling in Schweinfurt

A construction project setting records in several respects was launched to the west of Schweinfurt. The ex-US-settlement 'Askren Manor', which is now owned by the City of Schweinfurt, will be largely demolished by the middle of 2019 and be replaced by a new residential area. There are 34 three-storey rows of houses and 13 semi-detached houses on the 28-hectare area. The Ruppert GmbH & Co. KG demolition company, located in Frickenhausen, which implemented part of the demolition measures, was faced with a lot of work.

The empty houses were dismantled according to modern and eco-friendly standards, which included separating the used construction materials. But that was not all: the construction waste was, if possible, to be recycled in line with the principles of the German 'Kreislaufwirtschaftsgesetz' (Circular Economy Act). This requirement can be easily met by waste PVC construction products. Besides a large amount of PVC floor coverings, approximately 2,500 used plastic windows accrued during the demolition process of the Schweinfurt settlement. These were mechanically recycled and later reused by the Dekura GmbH recycling partner. Thus, the Askren Manor dismantling project is one of the four largest waste window recycling projects nationwide in the last ten years and set a new record for the Land of Bavaria.

The floor coverings removed during the dismantling process were taken to the Troisdorf recycling plant operated by the Association for the Recycling of PVC Floor Coverings (AgPR).



Start with dismantling of Windows



Collection of used PVC windows in a container



Used PVC floor coverings being removed



A digger completing the works after selective dismantling

Long-term thinking in Langen

The town of Langen with its 36,000 inhabitants, located to the south of the Frankfurt am Main metropolis, is a much sought-after residential location in the Rhein-Main region. A prominent tower block, whose modernisation began in 2016, soars over the north of the town centre. The refurbishment works in house no. 35 with its 105 residential units concerned the technical equipment of the building, its sanitary facilities and improvements in fire protection, as well as the building's envelope. The aim was to considerably reduce demand for primary energy by approx. 80 per cent and to have the residential house recognised as 'KfW energy efficiency house no. 70'. The Langen eG construction cooperative, owner of the 15-storey building complex erected in 1973, invested 9.7 million euros for this purpose.

The 'Feldbergstrasse 55' project is not only remarkable in terms of its high future energy standards; the developer also extended the basic principle of environment and sustainability to include the construction waste accruing during the modernisation process. Subsequently, the idea of having more than 600 used PVC windows mechanically recycled and reused, put forward by the window construction company 'Löwe' from Kleinwallstadt as implementer of the project, was put into practice during the refurbishment works on the windows and facades. The decision was made to have the used PVC windows mechanically recycled with the aid of the nationwide collection and reuse system of Rewindo GmbH and its recycling partner VEKA Umwelttechnik GmbH (VEKA Environmental Technology).

"Sustainable action and responsibility for people and the environment generally play an important

part in our philosophy", emphasises Wolf-Bodo Friers, Chairman of the Board of the Langen construction cooperative. The approach put forward by the participants in the construction project was also recognised by the town administration, "The modernisation of the tower block in Feldbergstrasse 35 is certainly an exemplary project. In this case, the Langen construction cooperative demonstrates how the special demands for sustainability and environmental protection can be met", said Chairman of the Town Council, Stefan Löbig. He added that this was also obvious from the example of window replacement in particular.



Energy efficient renovation of the façade of the tower



Architect's vision of the finished ensemble



Windows exchange in the tower block



Collection of used components in special containers



Aerial view of Langen

The Günthersdorf shopping centre

Like a lawn mower tractor, the machine was sweeping across the floor of a large empty hall in the Günthersdorf shopping centre near Leipzig. At the front of the machine, there was a metal piece with a sharp edge. Its job was to 'peel' the old PVC floor covering off the ground in long strips.

This is how a total of 13,000 square meters of the used construction material were removed within a major reconstruction and refurbishment project - in principle, it was a routine measure. However, the demolition company engaged, Caruso Umweltservice GmbH from Großpösna, took alternative routes in disposing of the used material by deciding to replace waste incineration with environmentally friendly mechanical recycling. In this way it was possible to make new PVC building products from the alleged 'construction waste'.

The Günthersdorf example proves that the recycling and reuse of PVC construction waste are in line with the eco-friendly principle of 'selective dismantling' that the demolition industry has ascribed to. Materials accumulating during the demolition process are separated in an economically viable way and are reintroduced into their own cycle according to the German 'Kreislaufwirtschaftsgesetz' (Circular Economy Act). If it is suitable for recycling, the construction waste accruing during the demolition process is reprocessed in mobile recycling plants and is reused locally, which reduces the client's cost."



Removal of PVC floor coverings from the hall's floor

A new beginning after demolition

The demolition diggers were rolling in the 'Bossi Quarter' in the Würzburg district of Grombühl. Within a neighborhood development project, the developer Stadtbau Würzburg GmbH had a total of ten residential blocks with 144 flats and an area of approximately 15,000 square metres per storey dismantled there. The buildings were erected a long time ago - from 1950 to 1956 - and no longer met current requirements for environmental protection and quality of the indoor environment. This is why the managers of the communal housing company decided to demolish and rebuild the houses according to modern standards. The first flats are planned to be ready for occupancy by 2020. The whole residential complex is predicted to be completed by mid-2021.



Demolition and reconstruction in the 'Bossi Quarter'

The plastic windows installed later had no longer met the requirements for thermal insulation for a long time, either. The removal of 600 used PVC windows has now been underway for a short while in the Bossi Quarter. In accordance with the principles of the German 'Kreislaufwirtschaftsgesetz' (Circular Economy Act) and the requirements concerning the separation of construction materials, Germany's demolition companies have not used the demolition ball for a long time, as they used to in the past; instead, they ensure that the body of the building is selectively dismantled by gradations. Experts on construction and the environment speak of 'Urban Mining': the building as a supplier of valuable substances that need to be saved for economic and ecological reasons and that are to be recycled to the largest possible extent.

By consent with the developer, the Ruppert GmbH & Co. KG demolition company from Frickenhausen got in touch with Rewindo and Dekura, one of the company's business partners. The Ruppert family business from Lower Franconia has existed for more than 50 years and has special skills and experience in the areas of demolition projects, including, among others, recultivation, recycling and waste disposal management. The managers said that Stadtbau Würzburg was an environmentally conscious partner that fully supported the concepts of selective dismantling and cooperation within recycling projects. Stadtbau Würzburg GmbH, a 100 per cent subsidiary of the City of Würzburg, is the owner of 5,000 rented flats, including 375 in the Grombühl district.



In some cases, only a sledgehammer can help.



Used PVC window frame profiles for material recycling

Solid protection for 'Kini's' chambers

Majestically positioned on top of a rock, Neuschwanstein Castle soars above the Hohenschwangau Plains near Füssen in a fairy-tale setting. Starting in 1869, King Ludwig II of Bavaria (also called 'Kini') put a lot of effort and love for detail into erecting the building, whose exterior was modelled on a medieval knight's castle. However, after the building had been completed, the eccentric monarch lived there for no more than a total of 172 days until he died on 13 June 1886 in Lake Starnberg under unexplained circumstances.

Apart from the residential chambers and the servants' rooms, the throne room in particular is among the main attractions inside the building,



The throne room from above

which is now visited by almost 6,000 tourists per day. There is a precious mosaic pattern on the floor of the throne room. If it was unprotected, the surface would wear off and fade within a short time. This is why the Bayerische Schlösserverwaltung (Bavarian Castle Administration) thought up a creative solution: a PVC floor covering with a precise 'photocopy' of the mosaic (called 'Fotoboden') was laid onto the parts of the hall that can be walked on. Visuals United AG in Kaarst near Düsseldorf specialises in this type of custom-made product.

As a rule, PVC floor coverings are extraordinarily durable and are thus used in numerous buildings intended for a lot of public business. Even though the material is extremely robust, the floor covering in the throne room needs to be replaced from time to time.

The Association for the Recycling of PVC Floor Coverings (AgPR) ensures that the used PVC floor coverings are mechanically recycled in its Troisdorf recycling plant. The 'Kini', who loved nature, would have been pleased with the way the company provides solid protection for the floor in his throne room while preserving its attractive outer appearance. He would also be happy with the eco-friendly treatment of the protective floor coverings that have been removed.



Removal of the old floor covering



The target is AgPR's recycling plant

Best Practice in Mühlhausen

Only at first sight did the energy-efficient refurbishment of a four-storey residential home with 24 residential units in the Mühlhausen district of Felchta, erected in 1986, seem to be part of a number of similar projects. However, there was something special about the construction project, carried out on behalf of the owner Murada GmbH and IF Bau GmbH, both from Kirchzarten, that caught public attention: having been removed and replaced with new energy-saving plastic windows, the used PVC construction components, including 89 windows and 24 balcony parts, were not, as is often common practice, disposed of in a waste incineration plant; instead, they were recycled and later reused.

The TMP Fenster + Türen GmbH window construction company, located in Bad Langensalza, which is part of the Rewindo network and has been very familiar with the recycling of used PVC window frames for many years, cooperates with VEKA Environmental Technology (VEKA Umwelttechnik), Höselsberg-Hainich, in the area of waste management. The latter operates one of the largest and most modern window recycling plants in Europe and was recently awarded the 2017 Strategy Prize by the Federal Association 'Strategie Forum'.



Residential building with scaffolding in Mühlhausen



Replacement of windows for later energy saving



Used window frames after dismantling

Industrial history to be continued

A chapter in industrial history came to an end in the Troisdorf industrial park - at least for the time being. For several decades, the former production site of Dynamit Nobel served as a location for the extrusion of plastic pipes (made by 'dynarohr' since 1962) and window frame profiles under the brand name 'Tropical', which is still known today. Most recently, they were made by profine GmbH. At the end of 2009, manufacture was closed, and profile production was divided between the locations in Berlin and Pirmasens.

Now T-Park GmbH, the current owner of the site, has had the office and manufacturing building dismantled in accordance with eco-friendly standards.

There are plans to build a modern industrial park with small units for flexible use and a total area of approximately 10,000 square metres. The Peter Kolb GmbH demolition company from Aschaffenburg separated the used construction materials from each other to a considerable extent. This was particularly obvious for used PVC construction products. Approximately 150 used PVC windows and 1,100 square metres of PVC floor coverings were collected in containers. The windows were then mechanically recycled by VEKA Environmental Technology (VEKA Umwelttechnik GmbH).

In other words, the Troisdorf industrial history is at least continuing for used PVC window frames, albeit in other locations. The PVC floor coverings removed in T-Park will also live a second life. Approximately 2,500 tonnes annually are recycled in the recycling plant of the Association for the Recycling of PVC floor coverings (AgPR). For Germany's demolition industry, the Troisdorf project is a good example of the selective dismantling of buildings, which has been propagated for many years.

The construction project in this location has had a much longer tradition. Mipolam developed and manufactured the first PVC floor coverings as a substitute for rubber here.



The digger helps in collecting used PVC window frames



In a container to the recycling plant



Display for the mechanical recycling of PVC window frame

Recycling premiere in Koblenz

Some time ago, the works concerning the energy-efficient refurbishment of a multi-storey residential and commercial building from the pre-war period, standing out in terms of its architectural features and including 27 flats, a penthouse and office areas, were underway at Friedrich-Ebert-Ring near the City of Koblenz.

There was something special about the construction project, headed by the K.H. Berger housing company on behalf of owner Walter Geltermair, which is why it caught public attention in the city on the Middle-Rhine.

Having been removed and replaced by carpentry company Stäbe from Höhr-Grenzhausen, the 89 used PVC windows and additional 24 balcony components were not disposed of in a waste incineration plant, as is often common practice. Instead, they were recycled and later reused. It is the first recycling project of its kind in Koblenz.

“The developer’s recommendation drew my attention to the nationwide Rewindo recycling system and thus, to the opportunity to dispose of used PVC window frames via eco-friendly recycling and reuse rather than waste incineration. The best thing about it is that this method considerably reduces the costs,” reported owner Geltermair.

He explained that this was the reason he had got in touch with VEKA Umwelttechnik GmbH (VEKA Environmental Technology) - one of the recycling partners of Rewindo, which ensures that the recycling measures for waste PVC window frame profiles are coordinated in Germany. The organisation, which

also cooperates with recycling partners in other European countries, is actively involved in meeting the European-wide PVC recycling quotas laid down in the VinylPlus® sustainability programme, a voluntary commitment of the European PVC industry. According to the initiative, approximately 800,000 tonnes yearly are to be recycled by 2020. Rewindo is making an important contribution to this.



Transport of used PVC window frames



Raw material for new recycled window frame profiles



Exchange of PVC Windows in Koblenz

New ‘Wabenquartier’

The layout of the residential complex in the Duisburg district of Neudorf resembles the honeycombs of a beehive. The striking architectural shape provided the building complex, erected in the 1970s, with its name: ‘Wabenquartier’ (honeycomb quarter). However, the nine houses with their total of 173 flats have been ageing recently. The developer, the housing cooperative ‘Wohnungsgenossenschaft Duisburg-Mitte e.G.’, decided to comprehensively renovate the residential buildings. The refurbishment works were completed in three construction phases by the autumn of 2018. Approximately 12 million euros were invested for this purpose. The measures included thermal insulation of the facades and flat roofs, planting roof gardens, building new, wide balconies with sliding shutters and installing new triple-glazed windows with plastic frames. On the inside, the buildings were fitted with glazed lifts and new doors to the flats. Beyond this, the buildings were designed to be largely accessible to the disabled and provided with a new safety concept.

The Duisburg carpentry company Blank removed more than 1,100 used windows made of PVC and replaced them with modern plastic windows from the Schüco Corona SI82 profile series. Biotrans GmbH from Schwerte, one of Rewindo’s logistics partners, collected the used construction components from the building site and ensured that the material was processed for the first time. During this procedure, metals and other materials were separated from the plastic. The pre-assembled PVC material was then forwarded to Rewindo’s recycling partner VEKA Umwelttechnik GmbH (VEKA Environmental Technology) for mechanical recycling.



Joining forces to install new windows



Completely renovated facades with modern balcony parts



The ‘Wabenquartier’ residential complex in Duisburg

Recycling set new educational standards

The energy-efficient refurbishment of the Nord secondary school in Jessen (Elster), Saxony-Anhalt, is considered an educational example in respect of the environment. The three-storey main building and a two-storey building erected in 1978, in which just under 300 pupils receive tuition, was provided with modern thermal insulation for the facades and suspended ceilings under the roof. The ongoing refurbishment works did not disrupt the normal school routine. New plastic windows ensure that the energy balance is further improved. The local architect's office of Dipl.-Ing. Lothar Suldt was entrusted with planning the project. There was something special about the promoted refurbishment project that attracted additional public attention: having been removed, 195 used PVC window frames from the years 1995 - 1998 were not disposed of in a waste incineration plant; instead, they were recycled and later reused.

An example that should set new educational standards because the Jessen construction project thus took part in the 'Best Practice for the Environment' campaign covering several German federal states. The Oewi Alu GmbH window recycling company, located in Jessen since 1991, cooperated with VEKA Umwelttechnik GmbH (VEKA Environmental Technology) in disposing of the used PVC windows. The latter company operates one of the largest and most state-of-the-art window recycling plants in Europe. This is the place to which the windows from Jessen are taken and the way they reach the recycling process.



Secondary school in Jessen (Elster)



The school saving a lot of energy after window replacement



Project participants go back to the classroom



Delivery of new windows

Flat owners as raw material suppliers

Energy-efficient refurbishment of the residential complex 'Alte Apotheke/corner of Schmittgasse' in the Cologne district of Zündorf. During this project, window manufacturer Meeth from Wittlich replaced approximately 600 used PVC windows with new highly heat-insulating plastic windows with modern profiles. The special thing about this project supported by KfW (Kreditanstalt für Wiederaufbau, Public bank for reconstruction) is that the owners of the total of 88 flats not only benefit from the developments in the area of window profiles, but ultimately become raw material suppliers for the manufacture of recycled windows themselves. In this case, experts also speak of 'Urban Mining', i.e. the recovery of valuable recyclable materials.

The old windows from Zündorf were thus used to manufacture new ones. The idea to recover raw materials was put forward by the implementing assembly company Sesterhenn GmbH & Co KG from Mülheim-Kärlich, a family business that has a company tradition going back 125 years. Their expertise not only convinced the flat owners, represented by the Cologne property management business quick immobilien Verwaltungs GmbH. Axel Klein from the rix2 architect's office, in charge of planning and construction management, is impressed by Urban Mining as a 'Best Practice' method, too: "To date, we have not been aware of the opportunity to recycle plastic windows. This is active environmental protection and, apart from that, at favourable terms. A solution that we will recommend to others."



Construction components after the dismantling process



Used PVC window frames being put into the container



New plastic windows are available



Representatives of the responsible project partners

press review

EUROPATICKER vom 09.06.2016



Seite: online Gattung: Newsletter

Startschuss für die Aktion Best Practice für die Umwelt

In Bad Langensalza betreibt einer der Rewindo-Recyclinganlagen Europas Bei energetischen Sanierungen von Wohn- und Gewerbegebäuden fallen...

INNOVATION UND UMWELT Ressourceneffizienz in der Region. Mit dem Geld unterstützt die Hildesheimer Meierei...

Deutschlands beste Energie-Scouts geehrt. Die besten Energie Scouts der Mittelschulinitiative Energieplus und Klimaschutz 2016 sind...

NORDERSTEDT. Hungerlauf durch die Stadt bringt 18.000 Euro ein. Sanierung - aber sozialverträglich. Doktor informiert Senioren über Behandlung nach Brüchen...

Rhein-Sieg. Frühjahrskur für den Rasen. Alte Trocal-Halle wird entkernt. Angebraten schon am Morgen...

Jessener Land. Recycling macht Schule. Es sind nur Schuhe. Rad nicht mehr im Müll. Pkw fährt in offene Tür. Einmal um das Handwerk geht's beim Fest...

KREIS OFFENBACH | R11. Tod durch Erstickten. Tag der Feuerweh. Neue Fenster aus alten Rahmen. Europäischer Meister...

LANGEN/EGELSBACH. Futter für den Fenster-Kreislauf. Frau erstickt, Mann starb an Überdosis. Mit kleinen Krediten vielen Menschen helfen. Millärbuhr kommt später...

VERBANDSPOLITISCHE UMSCHAU. Die Geschichte geht weiter. Nationale Sonnenschutzverbände gründen Netzwerk. Falcher Termin im Altkalender...

press review

EUROPATICKER vom 06.04.2017

Seite: online Gattung: Newsletter

13.000 Quadratmeter alte PVC-Bodenbeläge wiederverwertet

Ein Beispiel für die Umwelt: technisch möglich und in der Regel preiswerter ist als die Verbrennung

Einem Rasenmäher-Traktor gleich zieht die Maschine ihre Runden über die Bodenfläche einer großen leeren Halle im Einkaufszentrum Günthersdorf bei Leipzig. An der Vorderseite des Geräts befindet sich ein Metallteil mit scharfer Kante. Es dient dazu, den alten PVC-Bodenbelag in längeren Streifen vom Untergrund zu „schälen“. Insgesamt 13.000 Quadratmeter des ausgedienten Baumaterials werden auf diese Weise im Rahmen einer größeren Umbau- und Sanierungsmaßnahme entfernt – an sich eine routinemäßige Aktion. Doch das beauftragte Abbruchunternehmen Caruso Umweltservice GmbH aus Großpörschach ist ein Unternehmen, das sich für die Umweltservice GmbH als „Best Practice“ für die Abbruchbranche auszeichnet. „Das ist technisch möglich und in der Regel preiswerter ist als die Verbrennung, hat sich bei den Abbruchunternehmen und ihren Auftraggebern noch nicht überall herumgesprochen“, so Dr. Jochen Zimmermann, Geschäftsführer der Arbeitsgemeinschaft PVC-Bodenbelag Recycling (AgPR). Das vor über 25 Jahren gegründete Unternehmen koordiniert bundesweit die Wiederverwertung des Altmaterials und betreibt in Troisdorf bei Bonn eine eigene Recycling-

Spezialanlage. Dort wurden 2016 über 2.500 Tonnen ausgedienter Bodenbeläge recycelt. Zimmermann: „Auf diese Weise tragen wir zu einem geschlossenen, umweltfreundlichen Stoffkreislauf bei.“ Die in Troisdorf angelegerten PVC-Alt-Bodenbeläge werden nach Aussortierung anderer Materialien in der 1991 errichteten Anlage zu Feinmahlgut verarbeitet. Bei Eignung lässt sich dieses dann problemlos bei der Produktion neuer PVC/Bodenbeläge einsetzen“, erläutert Betriebsleiter Heinz A. Lübben. Die AgPR unterhält darüber hinaus ein bundesweites Netz von Annahmestellen. Best Practice für die Umwelt Das Leipziger Projekt von Caruso erfüllt die Voraussetzungen einer Teilnahme an der Aktion „Best Practice für die Umwelt“. Diese wurde 2016 zusammen mit der Rewindo Fenster-Recycling Service GmbH und der Arbeitsgemeinschaft PVC und Umwelt e.V. (AGPU) ins Leben gerufen. Dabei sollen in den Bundesländern Sachsen, Sachsen-Anhalt und Thüringen beispielhafte („Best-Practice“) Projekte ermittelt werden, bei denen eine Entsorgung ausgedienter PVC-Bauprodukte über werkstoffliche Recycling- und Stoffkreisläufe stattfindet. Neben Bodenbelägen sind dies Fenster, Türen und Rollläden, fernere Dachbahnen und Rohre. Die Aktion richtet sich an Abbruchunternehmen, Wohnungsgesellschaften, die Öffentliche Hand sowie an Bodenleger

Wörter: 486

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Koblenz

Immobilienpreise und Mieten steigen weiter

Analyse Sparkasse Koblenz stellt Marktbericht vor: Dynamik ist je nach Wohnlage verschieden

Die Sparkasse Koblenz hat ihren Marktbericht für den ersten Quartal 2017 veröffentlicht. Der Bericht zeigt, dass die Immobilienpreise in Koblenz weiter ansteigen. Die Mieten sind ebenfalls gestiegen. Die Sparkasse Koblenz erwartet, dass diese Trends in den kommenden Quartalen weitergehen werden.

Altes Bankgebäude wird zum Wohnhaus

Umweltanw. Am Friedrich-Ebert-Ring 2 werden im Frühjahr 21 Appartements fertiggestellt

Das alte Bankgebäude am Friedrich-Ebert-Ring 2 in Koblenz wird in ein Wohnhaus umgebaut. Die Sparkasse Koblenz hat den Auftrag für den Umbau vergeben. Die neuen Appartements werden im Frühjahr 2017 fertiggestellt.

1392

Das bringt der durchschnittliche Wert der Immobilienpreise im ersten Quartal 2017.

Mit kombinierter Therapie gegen Tumore kämpfen

Genetische Experten gehen in St. Drucker Ländchen in Arbeit des Lungentumors

Die Kombination von Chemotherapie und Immuntherapie zeigt bei Lungentumoren gute Ergebnisse. Die Experten in St. Drucker Ländchen arbeiten daran, diese Kombination zu optimieren.

Kinderwagen dringend gesucht

Seriöses Kinderkaufhaus plus Bittre um Spenden

Ein seriöses Kinderkaufhaus wird in Koblenz gegründet. Die Initiative sucht nach Spendern für den Kauf von Kinderwagen.

Zweikampfstreit

Wahl für Ehrhart bei der Wahlkabine

Die Wahlkabine bei der Wahlkabine wird im Zweikampfstreit. Die Wahlkabine wird im Zweikampfstreit.

Weg zur Gesundheit

Weg zur Gesundheit

Der Weg zur Gesundheit führt über die Natur. Die Natur ist der beste Weg zur Gesundheit.

Thüringer Allgemeine

10. Juni 2017 Seite 17

Ehemaliges Flüchtlingsheim wird saniert

Neuer Eigentümer kommt aus Sachsen. Vorerst wird ein Block umgebaut. Große Wohnungen geplant. Modellprojekt beim Recycle'n der Fenster

Das ehemalige Flüchtlingsheim in Unstrut-Hainich wird saniert. Der neue Eigentümer kommt aus Sachsen. Vorerst wird ein Block umgebaut. Große Wohnungen sind geplant. Ein Modellprojekt beim Recycle'n der Fenster ist ebenfalls geplant.

Die Sanierung soll eines der größten Projekte sein, bei dem die gesamte Anlage saniert wird. Die Arbeiten werden im Sommer 2017 beginnen. Die neuen Wohnungen werden im Herbst 2018 fertiggestellt.

Mehrere Millionen Euro werden investiert. Die Arbeiten werden im Sommer 2017 beginnen. Die neuen Wohnungen werden im Herbst 2018 fertiggestellt.

Die Sanierung soll eines der größten Projekte sein, bei dem die gesamte Anlage saniert wird. Die Arbeiten werden im Sommer 2017 beginnen. Die neuen Wohnungen werden im Herbst 2018 fertiggestellt.

Schloss Nauchwarden bei Flörsch

Schutz für „Kinis“ Gemächer

Höchste Belastungen für die Bodenbeläge: Zahlreiche Touristen besichtigen täglich. Schloss Nauchwarden bei Flörsch. Um das Mosaikmatten im Treppenhaus zu schützen, verlegten die Handwerker einen PVC-Folienboden

Das Schloss Nauchwarden bei Flörsch ist ein beliebtes Ausflugsziel. Die Mosaikmatten im Treppenhaus sind durch die vielen Touristen stark abgenutzt. Die Handwerker haben einen PVC-Folienboden verlegt, um die Mosaikmatten zu schützen.

Die Mosaikmatten sind aus Stein gefertigt und sind sehr wertvoll. Die Handwerker haben einen PVC-Folienboden verlegt, um die Mosaikmatten zu schützen.

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Bad Langensalza Allgemeine

Ein wenig repräsentatives Haus ist umfassend aufgewertet

Band 800.000 Euro in Euro- und Verwahngeld in der Eisenacher Straße in Mühlhausen investiert

Das Haus in der Eisenacher Straße in Mühlhausen ist umfassend aufgewertet. Die Investition betrug 800.000 Euro. Das Haus ist jetzt ein repräsentatives Haus.

Den Betrieb der Eltern gretick

Finanzen werden über 25-jähriges Jubiläum

Die Eltern gretick haben ihren Betrieb über 25 Jahre erfolgreich geführt. Die Finanzen werden über das 25-jährige Jubiläum gefeiert.

Preis für LBS wird übergeben

Landkreis

Der Preis für LBS wird übergeben. Der Landkreis hat den Preis für LBS übergeben.

Borbet wirbt auf Messen um Nachwuchs

Radfahrer präsentiert Ausbildungsmöglichkeiten. Borbet wirbt auf Messen um Nachwuchs.

Wie man Häuser umweltschonend zerlegt und verwertet

Aktion „Best Practice für die Umwelt“ sucht nach geeigneten Bauverbänden. Anlauf bei Industrievertretern in Bad Langensalza

Die Aktion „Best Practice für die Umwelt“ sucht nach geeigneten Bauverbänden. Anlauf bei Industrievertretern in Bad Langensalza.

Attraktivität der Mauer- und der City steigern

Haushaltsunterstützung SPD mit dem ersten zwei Ausgängen

Die Attraktivität der Mauer- und der City wird gesteigert. Die Haushaltsunterstützung SPD mit dem ersten zwei Ausgängen.

STADT SCHWEINFURT

Nun sind die letzten 23 Blocks an der Reihe

Abbrucharbeiten in der ehemaligen US-Wohnungsdorf „Akers Manor“ gehen weiter

Die Abbrucharbeiten in der ehemaligen US-Wohnungsdorf „Akers Manor“ gehen weiter. Nun sind die letzten 23 Blocks an der Reihe.

Stadttratt beruf „alle Hasen“

Galerieräume

Die Stadttratt beruf „alle Hasen“ hat neue Galerieräume. Die Galerieräume sind jetzt fertiggestellt.

SWL fördert Hänge am Berg

Aufträge zur Stadtbefreiung

Die SWL fördert die Hänge am Berg. Aufträge zur Stadtbefreiung sind vergeben.

VERBANDSPOLITISCHE UMSCHAU

Nachrichten und Meinungen aus den Verbänden und Institutionen

Startschuss für die Aktion „Best Practice für die Umwelt“

Bei energiereichen Sanierungen von Wohn- und Gewerbebauten wird werkstoffliches Recycling heute damit als die beste Vorgehensweise. Vor diesem Hintergrund wurde die Aktion „Best Practice für die Umwelt“ ins Leben gerufen. Die Aktion soll in den Bundesländern Sachsen, Sachsen-Anhalt und Thüringen beispielhafte („Best-Practice“) Projekte ermittelt werden, bei denen eine Entsorgung ausgedienter PVC-Bauprodukte über werkstoffliche Recycling- und Stoffkreisläufe stattfindet.

Beispielhaftes PVC-Recycling gesucht

Die Suche nach geeigneten Bauverbänden. Anlauf bei Industrievertretern in Bad Langensalza.

Schnelles Internet

Internet

Schnelles Internet ist ein Muss für jeden. Die Internetanbieter bieten immer schnellere Verbindungen.

Dauertisch feiert

Landkreis

Der Dauertisch feiert. Der Landkreis hat den Dauertisch feiert.

Unternehmer des Jahres wird gesucht

Mittelstandsband

Der Unternehmer des Jahres wird gesucht. Mittelstandsband ist ein Muss für jeden.

Best Practice für PVC-Recycler - RECYCLING magazin

https://www.recyclingmagazin.de/2017/11/01/best-practice-fuer-pvc-e...

RECYCLING magazin

Trends, Analysen, Meinungen und Fakten zur Kreislaufwirtschaft

Best Practice für PVC-Recycler

Nach knapp 1,5 Jahren Laufzeit geht die Aktion „Best Practice für die Umwelt“ der PVC-Recycler im kommenden Frühjahr in die Zielgerade.

Die Aktion „Best Practice für die Umwelt“ der PVC-Recycler geht in die Zielgerade. Die Aktion soll in den Bundesländern Sachsen, Sachsen-Anhalt und Thüringen beispielhafte („Best-Practice“) Projekte ermittelt werden, bei denen eine Entsorgung ausgedienter PVC-Bauprodukte über werkstoffliche Recycling- und Stoffkreisläufe stattfindet.

Die Aktion „Best Practice für die Umwelt“ der PVC-Recycler geht in die Zielgerade. Die Aktion soll in den Bundesländern Sachsen, Sachsen-Anhalt und Thüringen beispielhafte („Best-Practice“) Projekte ermittelt werden, bei denen eine Entsorgung ausgedienter PVC-Bauprodukte über werkstoffliche Recycling- und Stoffkreisläufe stattfindet.

portraits

Rewindo GmbH Window Recycling Service



Rewindo is a merger of currently 11 leading German plastic window frame manufacturers and profile brands that joined together in 2002 to set up a recycling initiative. The objectives of Rewindo include coordinating the materials cycle for used PVC windows, roller shutters and doors in Germany; raising the annual recycling quantities and auditing and recording them statistically. Rewindo is aimed at waste producers such as window construction and waste disposal companies, housing and demolition enterprises and public developers.

Along with its eight recycling and logistics partners, Rewindo ensures the logistical and technical implementation of the collection and reuse system. The recycling partners are able to recover almost unmixed PVC regranulates from waste windows and roller shutters using state-of-the-art recycling technology. The material then flows back into the manufacturing processes implemented by the window profile manufacturers, who use it to produce recycled windows and construction profiles. In 2017, more than 32,000 tonnes of recyclates from used PVC windows were thus reintroduced into the materials cycle, which is equivalent to 1.8 million window units. The recycling rate is above 88 per cent.

www.rewindo.de

Arbeitsgemeinschaft PVC und Umwelt e.V. (AGPU)



The AGPU, located in Bonn, was founded in 1988 and has now celebrated its 30th anniversary. Furthering tried and tested measures and proactively implementing new ideas - these are the two objectives that have marked AGPU's successful work since then. The working group unites approximately 60 companies along the entire PVC value chain - from PVC resin until the recyclate -, enabling its members to access an active and established industry network. AGPU is associate member of VinylPlus® and thus contributes even more to making the objectives of the sustainability programme known in Germany.

AGPU pools expertise from numerous experts and supports its exchange. Always up to date, AGPU collects, processes and densifies information. AGPU assumes the role of radar system in the industry by continually observing the media and developments in legislation. As a reliable partner, the association maintains an open public dialogue with decision-makers from business, politics, the media and NGOs. AGPU ensures transparency and builds up confidence on its dialogue partners' part by addressing them in a target-oriented manner and by convincing them with factual arguments.

Within the wide range of issues addressed by AGPU, the particular focus is on the PVC recycling sector, with a number of activities and programs being specifically aimed at the construction sector. As far as the PVC recycling campaign is concerned, AGPU closely cooperates, among others, with Rewindo's and AgPR's recycling systems for construction materials.

www.agpu.de

portraits

The Association for the Recycling of PVC Floor Coverings (AgPR)



The Association for the Recycling of PVC Floor Coverings (AgPR), located in Marl, was founded more than 25 years ago. It coordinates the national collection and reuse of the waste material and operates its own specialised recycling plant in Troisdorf near Bonn. In 2017, more than 2,500 tonnes of used PVC floor coverings were recycled there and afterwards reused. AgPR's partners include renowned floor covering manufacturers such as Altro, Gerflor, Polyflor and Tarkett. AgPR also keeps in close touch with a number of German and European associations.

www.agpr.de

Committed to sustainable development



VinylPlus® is the 10-year Voluntary Commitment to sustainable development by the European PVC industry. The VinylPlus programme was developed through open dialogue with stakeholders, including industry, NGOs, regulators, civil society representatives and PVC users. Five key challenges have been identified for PVC on the basis of The Natural Step System Conditions for a Sustainable Society.

The regional scope of the programme is the EU-28 plus Norway and Switzerland. Through the VinylPlus initiative, the European PVC industry is creating a long-term sustainability framework for the entire PVC value chain.

It aims to:

- recycle 800,000 tonnes of PVC per year by 2020
- promote a sustainable use of additives
- improve PVC products sustainability and their contribution to sustainable development
- reduce progressively GHG (greenhouse gas) emissions as well as energy and resource consumption along the entire production chain
- move towards a low-carbon circular economy
- build sustainability awareness along the value chain and among stakeholders.

www.vinylplus.eu

**Rewindo GmbH
Fenster-Recycling-Service**

Am Hofgarten 1-2
53113 Bonn
Tel.: 0 22 8 / 92 12 83 -0
Fax: 0 22 8 / 5 38 95 94
E-Mail: info@rewindo.de
Internet: www.rewindo.de



**Arbeitsgemeinschaft PVC
und UMWELT e.V.**

Am Hofgarten 1-2
53113 Bonn
Tel.: 0 22 8 / 9 17 83 -0
Fax: 0 22 8 / 5 38 95 94
E-Mail: agpu@agpu.com
Internet: www.agpu.com



**Arbeitsgemeinschaft PVC-
Bodenbelag Recycling**

Paul-Baumann-Str. 1
45772 Marl
Tel.: 0 23 65 / 50 92 133
Fax: 0 23 65 / 97 40 891
E-Mail: info@agpr.de
Internet: www.agpr.de

