ALUCOBOND®

Sustainable Façade Design

Aluminium composite panels
for durable façades

3A COMPOSITES

Villa at the Lake of Constance, Germany | **Biehler Weith Associated** | ALUCOBOND® PLUS anodized look C32 | © Brigida González

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We firmly believe:
only sustainable production
can lead to sustainable growth.

Sonia Mokdad
Chief Executive Officer
3A Composites
Architecture Europe &
Asia-Pacific

All our business processes over the last 50 years have been geared to treating the eco-system and our social environment with the utmost care and conserving raw materials. This commitment is summarised in our corporate **MISSION: TOGETHER. RESPONSIBLE**. Together, we aim to act responsibly and offer innovative, sustainable solutions.

The “Green Deal” adopted by the EU Commission poses significant challenges for the construction industry. This means that our main focus is ensuring the building materials we provide are environmentally friendly and conserve resources. Currently, approximately 40 per cent of the energy consumed in the EU is used in heating, cooling, lighting and maintaining buildings. The EU climate change targets have set the goal of a 60 per cent reduction in consumption by 2050. A properly constructed aluminium façade offers an efficient protective layer and can easily achieve energy values at passive house level. In terms of improvements in energy efficiency, buildings constructed using aluminium have received the prestigious seal of approval from the German Sustainable Building Council (DGNB). (Source: https://www.allesueberalu.de/Smart-Buildings.html)

The whole concept of our ALUCOBOND® façade panel has been developed with sustainability in mind: thanks to the sandwich structure, only a thin layer of aluminium is required to achieve maximum benefit in terms of product properties such as rigidity and flatness. And all this at an extremely low weight. Even after a service life of 60 years as a cladding material for a curtain-type rear-ventilated façade, as certified by the Environmental Product Declaration from the German Sustainable Building Council, ALUCOBOND® can still be recycled as a single material so that the aluminium can be recycled for reuse and retain the same quality standard.

Through ongoing innovation and the commitment of our employees, we continuously endeavour to make improvements in order to offer our customers even more sustainable solutions for their projects.

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Tour Elithis, France | **XTU Architects** | ALUCOBOND® A2 solid Black + naturAL Brushed & Line | © Elisabeth Leblanc

SUSTAINABILITY AT 3A COMPOSITES EUROPE

As an industrial company, we are actively committed to minimising our environmental impact while developing high-quality products which support our customers' creative ideas.

The constantly growing demand for resources has prompted us to find innovative ways to reduce waste and reuse existing resources efficiently. This commitment manifests itself in our externally certified health, safety, energy, environmental and quality management systems (ISO 45001, ISO 50001, ISO 14001, ISO 9001). Regular reviews of the sustainability targets we have set ensure that our systems and processes are continuously improved. Our energy management system, for example, makes a significant contribution to environmental and climate protection by tapping into unexploited energy efficiency potential, reducing energy costs and cutting greenhouse gas emissions. You can find specific examples of this on page 29.

We aim to set a benchmark with our efforts towards sustainability and, in so doing, live up to our responsibility as market leader. Our corporate strategy is clearly focused on reducing our CO_2 footprint, driving forward the circular economy and developing sustainable, innovative products.

Vision
3A COMPOSITES EUROPE

Our vision is to design and market products and functional solutions which make the world a better, safer and more sustainable place to live.

Mission
3A COMPOSITES EUROPE

Our mission is to develop, produce and market high-quality aluminium composites, plastic sheets, paper and foam sheets.

Aim

By 2035, we aim to use CO_2 neutral manufacturing processes to create our products (Scope 1 & 2), to make them 100% recyclable and offer solutions which leave the smallest possible ecological footprint.

Implementing our sustainability strategy

In implementing our sustainability strategy, we focus on four areas of action:

Reducing our carbon footprint

In all probability, the most decisive factor in preserving our planet is the reduction of the CO_2 footprint. We are working continuously to reduce emissions in all areas of our business activities and along the value chain in order to contribute to this very ambitious goal.

Driving forward the circular economy

In addition to saving valuable raw materials, avoiding waste and recycling pre-consumer scrap (i.e. scrap generated during the manufacturing process at our sites), we also aim to identify potential methods for feeding panels which have reached the end of their service life back into the cycle.

Developing sustainable and innovative products

Our special focus has always been on research and development. Our engineers are passionate about making existing products better, enhancing them or creating new, improved products which offer our customers greater benefits in terms of quality, functionality, processing options or service life.

Promoting profitable growth together with customers and employees

We concentrate all our efforts on our customers and their needs: in the course of working towards the best possible products and first-rate solutions for customer applications, we innovate and break new ground together. The great dedication and passion our employees invest in their work form the basis for this success.

Sustainable Development Goals

Our sustainability management programme is based on the Sustainable Development Goals (SDGs) of the United Nations.

These goals became part of the United Nations 2030 Agenda for Sustainable Development on 1 January 2016. In line with the framework provided by the United Nations, we focus on four SDGs over which our company has the greatest influence:

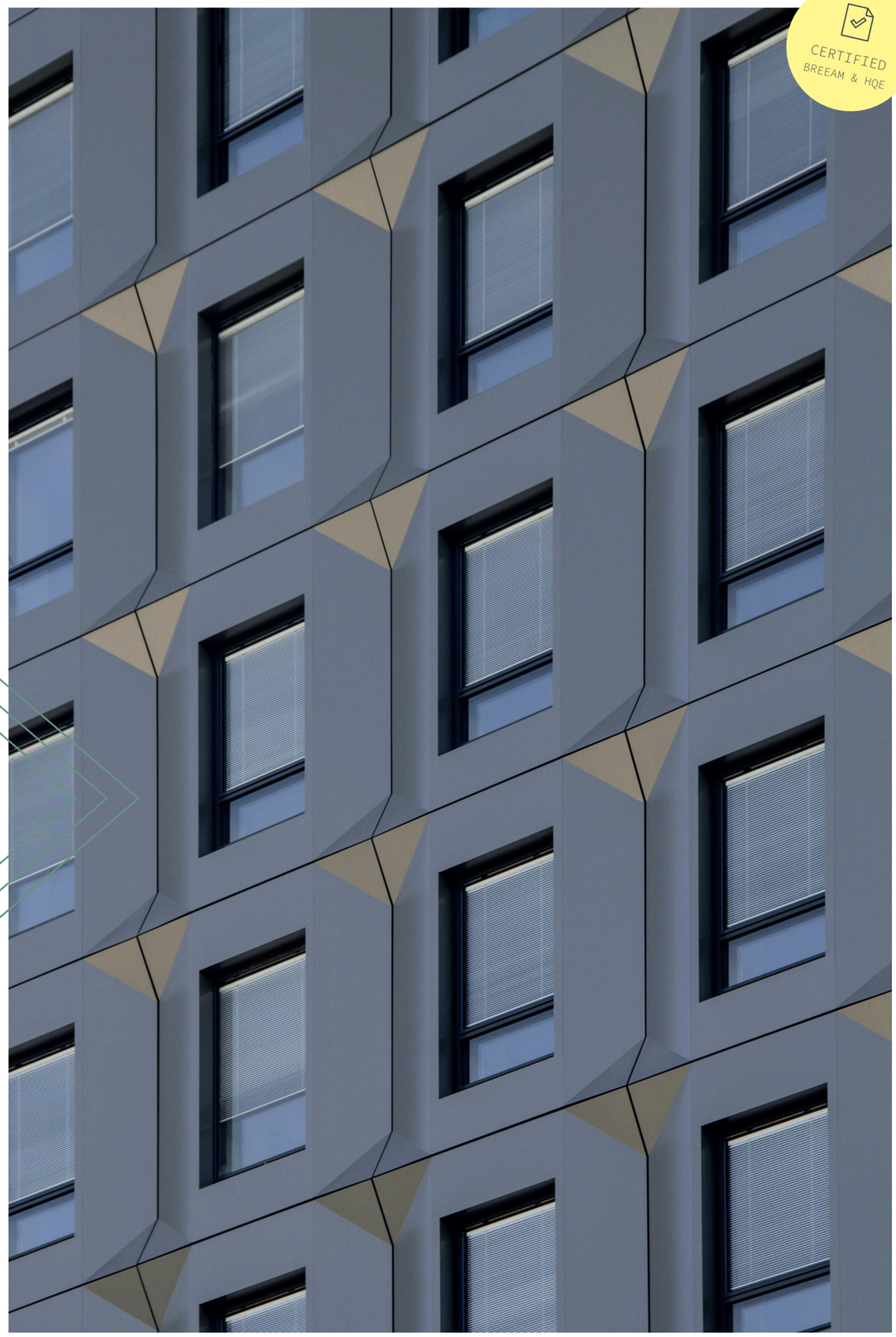
Decent work and economic growth
We offer our workforce training and qualification programmes to improve their employment and career prospects. We also increase productivity and contribute to sustainable economic growth by implementing modern technologies.

Industry, innovation and infrastructure
In the course of developing and implementing innovative aluminium façade systems, we promote the development of advanced technologies and improved production processes. By providing durable and sustainable building materials, we contribute towards the modernisation and stability of the infrastructure and towards a sustainable use of resources.

Responsible consumption and production
Our commitment includes reducing the emission of greenhouse gases, returning material to the recycling economy and making careful and respectful material choices (e.g. recycled aluminium).

Climate action
Using environmentally friendly and recycled materials in production allows us to reduce our carbon footprint. The integration of energy-efficient technologies in production processes minimises energy consumption and reduces greenhouse gas emissions.

Office complex View, France
Baumschlager Eberle Architekten
ALUCOBOND® PLUS naturAL Line
© Ooshot



Chevaleret, France I **Valream / Archigroup** I ALUCOBOND® Grey Metallic I © Milène Servelle

A SUSTAINABLE PRODUCT CONCEPT: ALUCOBOND® FAÇADE PANELS

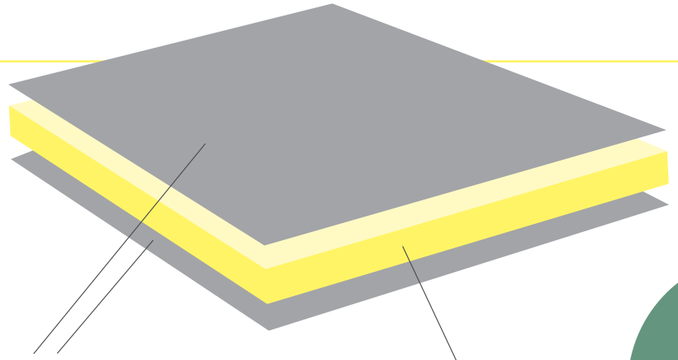
Our composite product concept unites optimum product performance and the smart use of raw materials.

Even after a 50-year service life as cladding on a rear-ventilated façade, ALUCOBOND® can be regarded as a passive store of recyclable materials as it is infinitely recyclable and the recycling process does not have an adverse impact on the quality.

The product: ALUCOBOND® aluminium composite panels

The main elements of ALUCOBOND® panels are two 0.5 mm thick aluminium outer layers and a mineral core. The panel is used as a cladding material in rear-ventilated façade systems.

Thanks to the composite structure, the panel is exceptionally flat, has a high bending stiffness and, at the same time, it is extremely lightweight. Due to its lower aluminium content when compared with solid sheet, the energy consumed to manufacture one square metre of material providing the same high level of stiffness is considerably lower.



Aluminium

The composite structure of ALUCOBOND® consists of corrosion-resistant aluminium cover sheets.

On average, 43 % of the aluminium used in the manufacture of ALUCOBOND® consists of recycled material. We also offer a version which contains 89 % recycled aluminium. By using secondary aluminium, the global warming potential in the manufacturing phase can be significantly reduced, because melting down aluminium scrap requires only around 5 % of the energy needed for primary aluminium production.

ALUCOBOND® can be ordered with a recycled aluminium content of 89 %.

Core material

ALUCOBOND® core material is predominantly made up of mineral components. These require a small amount of primary energy, are 100 % recyclable and can be fed back into the recycling system.

Advantages of rear-ventilated façades (RVF)

The RVF is characterised by its cost-effectiveness, advanced technology and maximum design scope. Rear-ventilated façades have become one of the most successful façade systems.

In addition to the guarantee of functional safety and broad design scope, property developers and architects particularly appreciate the sustainable construction method and the subsequent low maintenance costs. The rear-ventilated construction system is equally suitable for existing and new builds.

The key feature of a rear-ventilated façade is the ventilated space between the insulated external wall and the ALUCOBOND® cladding (weather protection).

Compared with other façade systems, e.g. (ETICS) external thermal insulation composite systems, RVF façades require much less maintenance. The façade material does not need to be replaced several times during its service life and the cladding material provides optimum protection. These factors have a favourable impact on the building's LCA (life cycle assessment).

RVF protects the interior of the building from becoming too hot in summer and from becoming too cold or allowing heat loss in winter. This promotes an optimal indoor climate and prevents condensation.

Orona, Spain
LKS, Xabier Barrutieta
ALUCOBOND® naturAL Reflect
© Agustín Sagasti

Reduced material input, higher efficiency

ALUCOBOND® composite panels are a sustainable solution for modern façade systems. The sandwich structure of the panel combines two cover layers with a pressure-resistant core. The result is: a very rigid and robust material which only uses the resources which are really needed. The principle is simple: best possible physical properties maximum performance and optimised use of raw materials.

Smart lightweight solutions for façades

The name ALUCOBOND® is synonymous with lightweight materials. A 4 mm-thick façade panel weighs just 7.6 kg/m^2, making it significantly lighter than other materials such as HPL, fibre cement or solid aluminium. Thanks to innovative folding techniques, the material offers not only structural rigidity but can be transported flat to be stored in a space-saving manner on the construction site.

Multidimensional sustainability

Evaluating façade systems from a sustainabilty perspective means assessing the carbon footprint, material lifespan, recyclability and maintenance requirements over the complete service life. The fire rating must also meet stipulated standards. We firmly believe that sustainable façade systems require multidimensional solutions - the ALUCOBOND® team is happy to share its expertise and provide answers to these challenges.

Sustainable dismantling and recycling

Our systems are designed so that they are easy to dismantle, and the individual components can be recycled efficiently. This innovative design not only reduces waste, but also sets new standards in the circular economy.

Environmental Product Declaration and environmental impact

To evaluate the sustainability of a building, comprehensive information about the materials used in construction is needed.

EPDs have been developed to provide architects and technical planners with data in a clear format. The information stretches from manufacturing sites to the end of life stage (cradle to cradle), and provides key factors for assessing a building's sustainability. The EPD shows the total amount of emissions for every phase of a product's life cycle.

EPD for ALUCOBOND®

ALUCOBOND® has an environmental product declaration in accordance with ISO 14025 and EN 15804. It includes all relevant information on the use of energy and resources, and also on the environmental impact in terms of the greenhouse effect, acidification/over-fertilisation of soils, destruction of the ozone layer and smog formation. The "ecological footprint" was issued by the German Institute for Construction and Environment (IBU).

Compared with the EPD issued in 2013, the global warming potential during the manufacturing stage has been reduced significantly as approximately 43 % secondary material is used in the production of the aluminium composite panels.

In all other impact categories, increasing the proportion of secondary materials has also led to a decrease in environmental impact. The core and paint have very little impact (>10 %) in all categories. This shows that composite materials are by no means at a disadvantage when compared with solid material.

In accordance with our Environmental Product Declaration, we set standards in terms of durability with a certified service life of at least 60 years.

THIRD-PARTY VERIFIED EPD Institut Bauen und Umwelt e.V.

25hours Hotel, Germany I **HPP Architekten GmbH** I ALUCOBOND® A2 Anthracite Grey & anodized look C32 + C0/EV1 I © Andreas Horsky

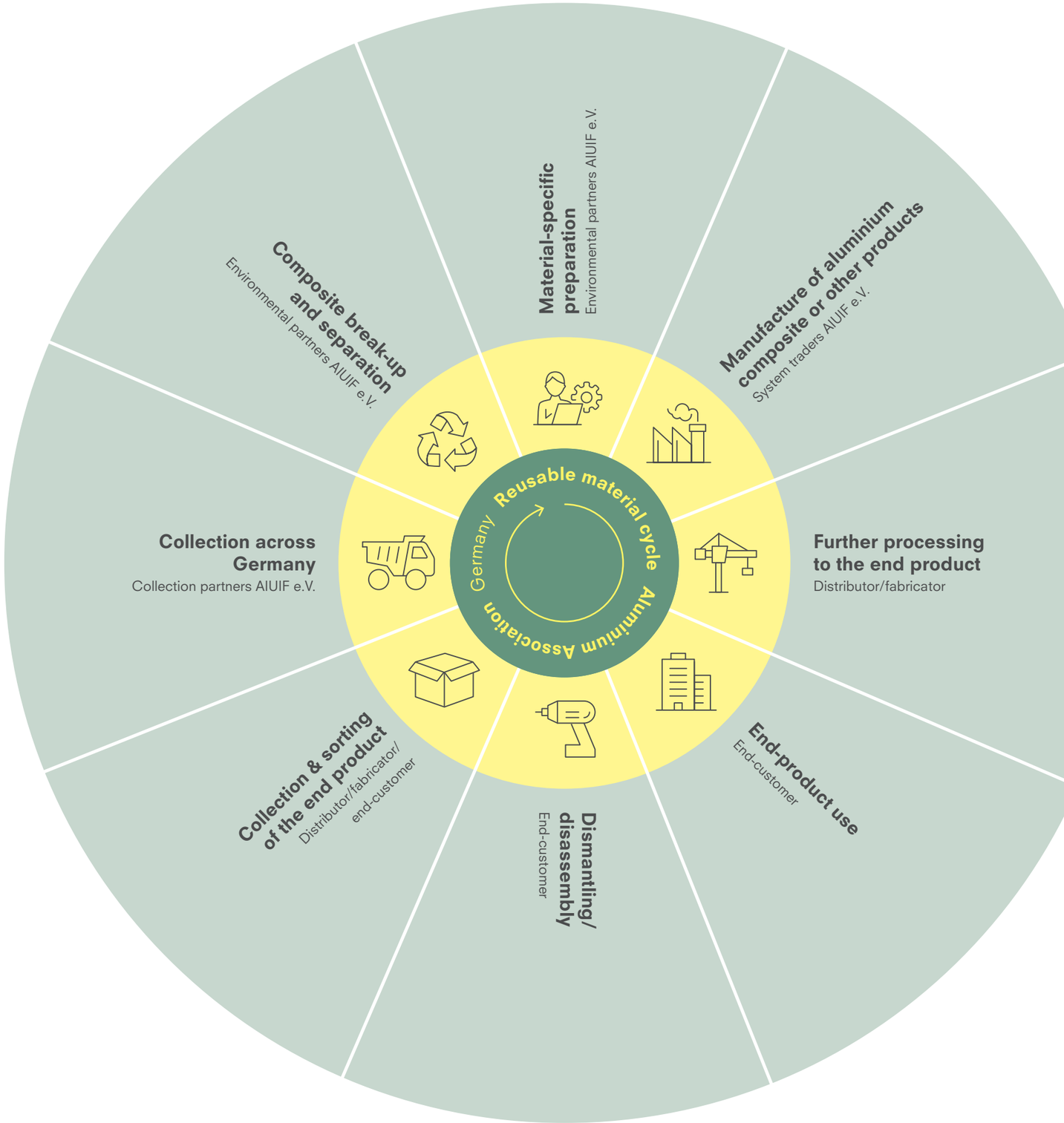
Reusable material cycle

Our aim is to feed a variety of panel materials which have reached the end of their service life back into our production process. Alongside our internal production recycling processes, this also requires a extensive network of recycling and collection partners.

We developed the recycling technology for reprocessing our production scrap in the 90s, and this process is firmly established in our workflow. To ensure our customers also have access to a recycling stream, 3A Composites joined the A U F (Aluminium and Environment in window and façade construction) in 2020 and set up a working group, dealing specifically with aluminium composite recycling.

As a pioneer in the industry, we were the very first European composite panel manufacturer to set up a recycling system for the return of our materials within Germany. Collection and recycling is carried out in cooperation with our A U F partners. Backed by German metalworking companies, prefabricated house manufacturers and other companies, the association focuses on the organisation of a closed loop recycling system for aluminium windows, doors and façades.

Join us at 3A Composites in disposing of aluminium composite panels sustainably, and get in touch with one of our collection partners today so that your composite material can be recycled.



Recycling

In the past, aluminium was considered to be a material requiring high levels of primary energy. However, thanks to the materials impressive durability and excellent recycling properties, its image has significantly changed.

Unlike other façade materials which may have to be treated as hazardous waste at the end of their life cycle, ALUCOBOND® can be completely recycled. In the recycling process, the individual components (aluminium and core material) can be separated residue-free and then recycled.

Step 1

Shredding of panel sections
The scrap, in the form of waste panel material, is processed into chips of a uniform size.

Step 2

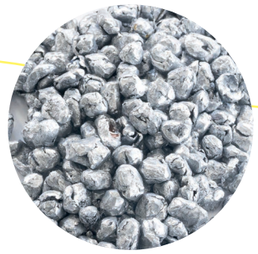
Separating composite material using a turbo rotor mill
High air throughput spins the chips at high speed towards the blades and breaks them up into their constituent parts.

Step 3

Separation due to weight differences between the core and aluminium
The components are separated according to their different densities by using an eddy current process.

Step 4

Preparation of the components
After separation, the aluminium is sent directly for melting. The core material is further processed before being returned to the cycle.



aluminium

PLUS/FR core

A2 core

Step 5

Re-utilisation
The aluminium recovered by means of recycling is used to produce the same highly corrosion-resistant aluminium alloy 5005/A as is used in the manufacture of standard ALUCOBOND® panels.

The mineral components are reused in secondary applications.

Overall, the process of returning the material to be recycled is extremely successful. A wide range of alloys are used in the diverse applications of aluminium. They differ in terms of the elements added, such as magnesium or copper, which lead to different product properties in terms of hardness, resistance and bending stiffness. The targeted collection and separation of aluminium scrap in the most homogeneous form possible is, therefore, of great importance in the recycling process, as this preserves the specific characteristics of the alloy when it is reused.

By efficiently using unmixed components, not only is resource efficiency maximised, but the ecological footprint of aluminium scrap recycling is also reduced to a minimum.

Building certifications throughout the world

Sustainable building certifications are a central component of modern architecture and building design. They offer a structured approach to assessing and improving the ecological, economic and social sustainability of construction projects.

Certification systems such as DGNB, LEED, BREEAM and HQE set comprehensive standards to ensure the eco-friendliness of buildings. A key element in these certifications is the choice of suitable building materials. ALUCOBOND® façade panels satisfy all the requirements needed to support sustainable building certification. Their outstanding properties such as durability, energy efficiency and recyclability make them the ideal choice for construction projects which strive for the highest sustainability standards.

CERTIFIED

The following systems exist worldwide for this certification:

DGNB
(German Sustainable Building Council)
Certifications: Bronze, Silver, Gold, Platinum
www.dgnb.de/en/

LEED®
(Leadership in Energy and Environmental Design)
Certifications: Certified, Silver, Gold, Platinum
www.usgbc.org

BREEAM®
(Building Research Establishment Environmental Assessment Methodology)
Certifications: Pass, Good, Very Good, Excellent, Outstanding
www.breeam.org

HQE
(Haute Qualité Environnementale)
Certifications: Pass, Good, Very Good, Excellent, Exceptional
www.behqe.com

Cooperation with associations

As a company, we value close cooperation with trade associations which are firmly committed to sustainability in construction.

These memberships enable us to act as a driving force in the development and implementation of sustainable building practices and standards in the industry.

SOLAR.shell – Parametrically optimised solar façade, Germany | ai:L Architektur-Institut Leipzig at the HTWK Leipzig (Frank Hülsmeier, Stefan Huth, Adrian Heller) | ALUCOBOND® PLUS Pure White 10 | © Stefan Huth

House of Music, Hungary I **Sou Fujimoto Architects** I ALUCOBOND® PLUS spectra Desert Gold I © György Palkó

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RESPONSIBLE PRODUCTION PROCESSES

When manufacturing ALUCOBOND®, we work towards systematically improving our carbon footprint. Comprehensive operating data is required in order to obtain specific details and an understanding of where there is potential for improvement.

We work in collaboration with **Ecochain**, a body which specialises in the preparation of life cycle assessments (LCA). By using the Ecochain software, we are able to make specific and quantifiable statements about the carbon footprint of ALUCOBOND® and identify optimisation potential. We are also a **member of the European Coil Coating Association (ECCA)** and a leader in the fields of coil coating standards and emission control. In the coil coating process, 99 % of all volatile organic compounds (VOCs) are captured by solvent combustion. This means the process of **coil coating** ALUCOBOND® composite panels is environmentally sound, and the **VOC A+ classification** confirms this fact.

The manufacturing process adheres to the strict European and German regulations in Directive 2010/75/EU (Industrial Emissions comprising the German Solvents Ordinance (31.BImSchV)).

Environmentally conscious manufacture for the highest quality

Raw materials

Use of the top-quality raw materials, in particular highly corrosion-resistant aluminium.

Production

Exclusion of any toxic substances or heavy metals from the entire production process and in the end product.

REACH

REACH-compliant PAH (polycyclic aromatic hydrocarbon) compounds below the limit values required by the EU.

Our promise

ALUCOBOND® fulfils the emission requirements for VOC and SVOC and has an A+ classification.

Environmental standards

Compliance with the most stringent environmental standards due to successful ISO certifications in the areas of environment and energy management.

Production process

100 % German made for the European market.

Flame-retardant

ALUCOBOND® aluminium panels have a core which comprises only mineral additives and halogen-free flame retardants.

Waste material

Consistent recycling of production waste.

Achievements and progress so far

Optimisation of production processes and resource efficiency

We continuously invest in sustainable production processes, such as a heat exchanger to recuperate most of the heat from exhaust air generated by the drying process at our aluminium composite coating line. An efficient system feeds energy back into the coating process and recycles it, resulting in a considerable cut back in the energy sources previously used. In addition, by means of continuously recirculating cooling water and targeted implementation of other technical measures (cascades, squeezing systems, continuous monitoring of individual processes) water consumption was reduced dramatically in individual production steps.

Less impact

Excess paint is recovered during the process and not incinerated as waste. All solvents used to clean the machines are collected, recycled and reused.

Saving electricity, gas and steam

We have also set ourselves annual environmental targets as part of our ISO certifications – e.g. for our energy management system (ISO 50001). In this context, we define target savings in electricity, gas and steam on an annual basis. We have based the target value on kWh/m² per finished product. The value is monitored continuously and, over the last years, it has decreased steadily.

Why buildings with an ALUCOBOND® façade are the sustainable choice

Smart use of materials

Using ALUCOBOND® maximises the product by making the best possible use of raw materials. The advantages include flat façades, large span widths, elegant joint patterns and and 3-D façade options.

Innovative technologies

Innovative folding techniques and systems such as “easy fiX” can further reduce the amount of material required, to improve the U-value of the building and simplify transport and installation.

Durability and low maintenance costs

ALUCOBOND® is extremely durable and requires less maintenance compared with other façade systems. This results in a better life cycle assessment (LCA) over its entire life cycle.

High level of recyclability

ALUCOBOND® can be fully recycled at the end of its service life. The aluminium and core material can be reused without an adverse impact on quality and returned to the reusable material cycle.

Energy efficiency of RVF

When professionally installed, rear-ventilated façades help to reduce energy consumption for heating, cooling and maintenance of buildings. They achieve energy values which meet the passive house criteria meaning the buildings’ have improved energy efficiency.

Environmental Product Declaration

ALUCOBOND® is backed by an EPD in accordance with ISO 14025 and EN 15804, which provides detailed information about the use of energy and resources. It also confirms the material’s sustainability regarding service life, paint quality, frequency of cleaning, carbon footprint and recyclability. That is the ideal basis for assessing building sustainability.

Resource-saving, ISO-certified production

We have successfully obtained ISO certifications for energy and environment management. These monitor our production to ensure it complies with the most stringent environmental standards. In addition, monitor continuous improvement in the sectors of energy efficiency and water consumption is also regularly reviewed.

Evaluating a façade system from a sustainability perspective, requires more than assessing its carbon footprint, recyclability and maintenance requirements throughout its service life; other aspects such as the requirements regarding reaction to fire on a building or its location must also be taken into account. This underpins our firm belief: sustainable façade systems require multidimensional solutions.

Our ALUCOBOND® team is happy to share its expertise and offer a response to these challenges.

A wide range of design options

Lightweight and optimal flatness

Durability

100% recyclable*

Environmentally neutral*

Sustainable cost-effectiveness

Energy-efficient façade system*

Non-combustible or fire-retardant

Helpful design tools and comprehensive technical support

Casa Invisible, Slovenia
DMAA Delugan Meissl Associated Architects
ALUCOBOND® PLUS naturAL Reflect
© Christian Brandstätter

COMPOSITES

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*Relevant documentation can be found in our download centre on our website.

Design by www.waldgruen.design

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