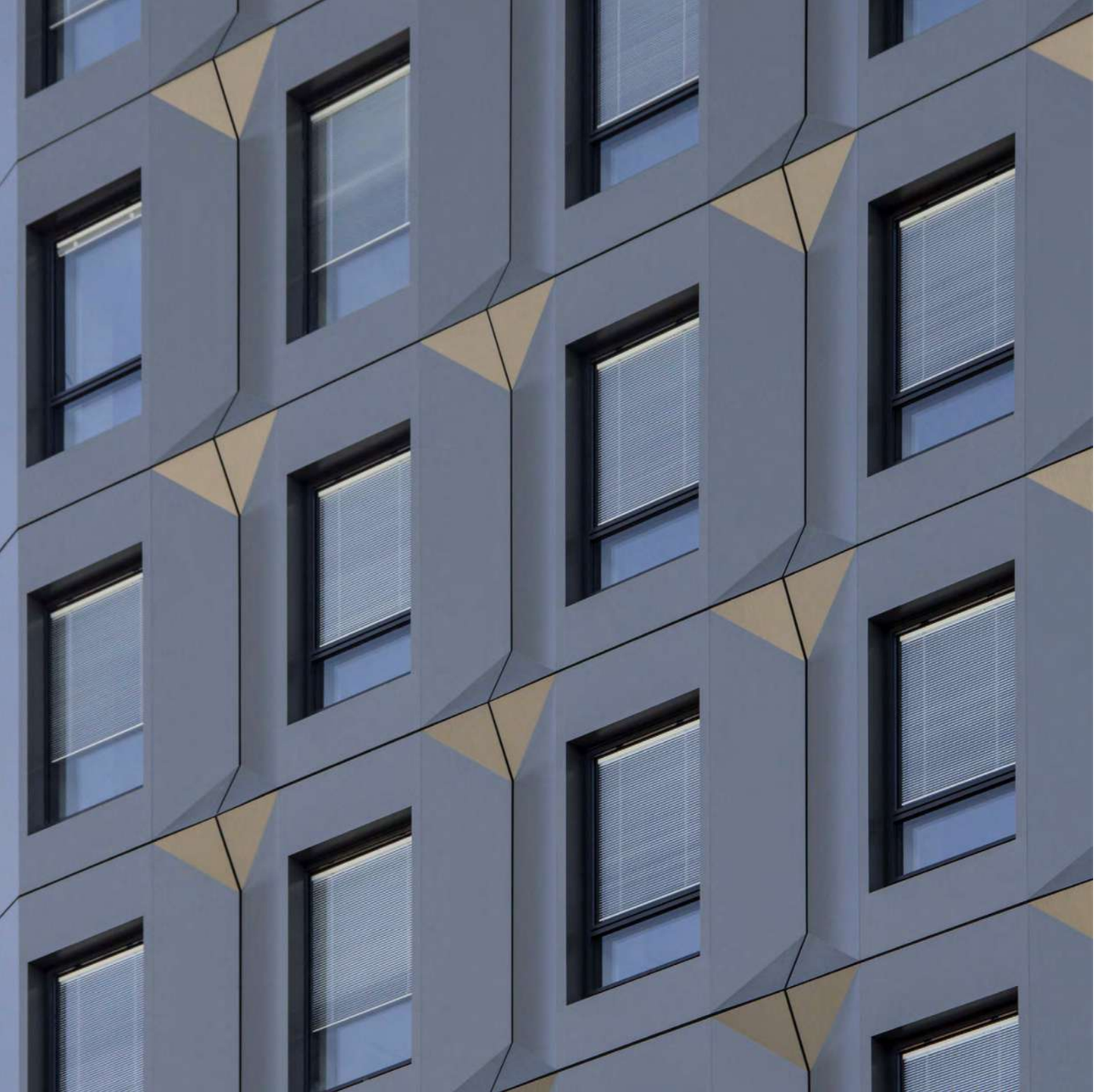
3A COMPOSITES

We care about a sustainable future

Sustainability at 3A Composites

ALUCOBOND®



“Sustainability is a permanent feature of our long-term corporate philosophy at 3A Composites, and is lived anew every day by our employees. Careful handling of our raw materials, the environment and our social environment in all business processes is something that has been practised for more than 50 years. Even during use, the product idea of composite material which provides optimum interaction between the use of the raw materials and maximum output of product characteristics is hard to beat.

During its service life, the aluminium composite panel contributes to active and passive energy saving thanks to having low servicing and maintenance costs and a high insulating effect. Even after a long service life and usage period of much more than 50 years as a cladding material of a rear-ventilated façade, ALUCOBOND® can be regarded as passive material storage thanks to its high recycling capability and return into the material cycle without downgrading the aluminium material and the mineral core materials. Together with experts from the construction industry and associations, we continuously work on solutions for designing our products in a way that is more innovative and sustainable for architects, planners, property developers, building owners and users.”

Sabine Amrein
Chief Business Officer Architecture Europe

Environmentally friendly handling of resources
at 3A Composites

We are aware of our social responsibility as a company and the manufacturer of ALUCOBOND®. We monitor and improve our actions on a continuous basis. Our integrated management system provides us with an important framework for implementing sustainability aspects in our business activities.

The main constituents of our integrated management system are the areas of safety, health, environment (SHE), energy and quality, and all of our management and decision-making processes are oriented to this.

Efficient handling of energy sources and therefore the preservation of the environment and resources is an important issue at 3A Composites. This is why 3A Composites has set up an energy management system in accordance with ISO 50001, with the goal of continuously reducing CO_2 emissions.

Strenuous efforts to reduce energy and water consumption, increase productivity, cut down waste and therefore significantly reduce CO_2 emissions are made on a continuous basis.

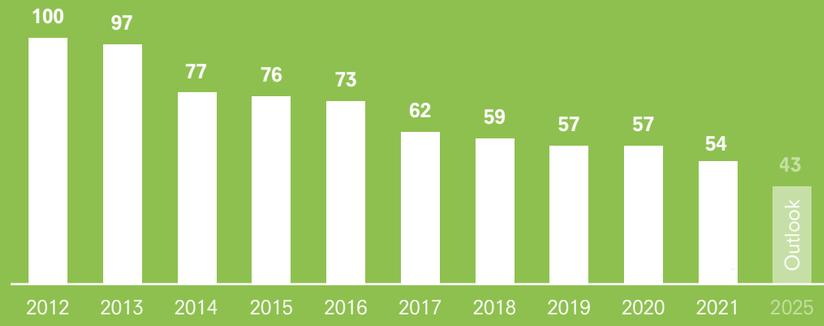
3A Composites has invested approximately € 20 million in sustainability measures in the last 20 years. Investments of € 15 million are planned for new, more energy efficient production processes and other CO_2 reductions in the next 3 years – for example, a heat recovery measure will lead to an annual CO_2 reduction of 450 t from 2021 onwards.

When raw materials and primary materials are purchased, a great deal of value is put on obtaining clean and ecologically harmless products, and we also use recycled primary materials wherever it is technically possible.

ISO certifications at 3A Composites

- Certified in accordance with ISO 45001 (Management systems for health and safety)
- Certified in accordance with ISO 50001 (Energy management system)
- Certified in accordance with ISO 14001 (Environment management system)
- Certified in accordance with ISO 9001 (Quality management system)

Reduction in CO_2 emissions (in % in basic year 2012)



60 %
less waste water in the last 10 years

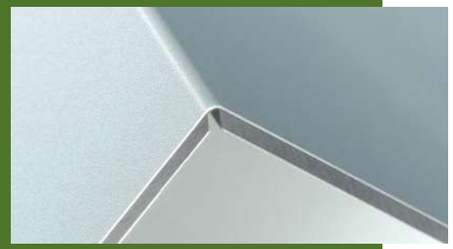
30 %
energy reduction in the last 10 years

14 %
less waste in the last 10 years

46 %
CO_2 reduction in the last 10 years

The ALUCOBOND® product

ALUCOBOND® is a composite panel consisting of two aluminium cover sheets and a non-combustible or fire retardant, mineral-filled core, which stands for sustainable building quality and the highest design standards. The façade material is characterised by its outstanding product characteristics such as precise flatness, surface and colour variety as well as excellent formability.



Excellent formability using milled edge technology

Things worth knowing about the manufacture of ALUCOBOND®

- ALUCOBOND® is made in Germany, and is ecological and sustainable
- Use of raw materials with the highest quality and highly corrosion-resistant aluminium (alloy 5005A)
- Raw materials are purchased from an ecological, European and local source
- Adherence to the highest international environmental standards
- No use of toxic materials or heavy metals whatsoever, neither in the production process nor in the product

The composite structure of ALUCOBOND® consists of corrosion-resistant aluminium cover sheets. Aluminium is an excellent lightweight construction material which requires a high degree of primary energy during initial production, but is suitable for very long usage periods in the industry, transport and construction areas because of its optimum recycling properties (100 % infinitely recyclable).

The ALUCOBOND® core material mainly consists of mineral components which use a small amount of primary energy and can still be 100 % recycled and returned to the reusable material cycle.

ALUCOBOND® is used in back-ventilated façade systems with an outstanding insulating effect, and therefore reduces the introduction of heat during the summer and increases the protection from cold provided by a building during the winter.

ALUCOBOND® therefore makes a valuable contribution to active and passive energy saving, which is reflected in a positive energy balance in comparison to solid aluminium material, for example.

The structure of an ALUCOBOND® panel is therefore an intelligent combination of ecology and economy.

Fire classification
ALUCOBOND® aluminium composite panels fulfil European standard DIN EN 13501-1.

ALUCOBOND® A2 = non-combustible, s1 = no or very little smoke development (best category), d0 = no burning droplets (best category)
ALUCOBOND® PLUS = fire retardant, s1 = no or very little smoke development (best category), d0 = no burning droplets (best category)

Flameproofing of the core material
The flameproofing of the core material of the ALUCOBOND® aluminium composite panel is exclusively realised using mineral additives. The use of halogen compounds in the core material is avoided.

PAK compounds – in accordance with REACH
ALUCOBOND® undershoots the PAK limit required by the EU and therefore fulfils the requirements of the EU legislation.

VOC and SVOC emissions
ALUCOBOND® fulfils the requirements with regard to VOC and SVOC emissions in accordance with the testing and evaluation system of the German Committee for Health-Related Evaluation of Building Products (AgBB) after 3 and 28 days.

Use of ALUCOBOND®
on the façade

The curtain-type rear-ventilated façade (CRF) system

Cost-effectiveness, sophisticated technology and the maximum number of design variations are the quality characteristics of the CRF.

Curtain-type rear-ventilated façades are now one of the most successful façade systems. In addition to the functional safety and freedom of design, property developers and architects particularly appreciate the sustainable construction method with low servicing costs. The rear-ventilated construction system is suitable for both existing and new buildings.

The characteristic feature of a CRF is the separating layer of air between the insulated exterior wall and the ALUCOBOND® cladding (weather protection).

Resistance of façade materials

The German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) confirms that our ALUCOBOND® material has a usage period of more than 50 years. This puts us in the highest category in the "Usage period of components for the lifecycle analysis of the BBSR" table.

Unlike other façade systems such as thermal insulation composite systems, our material does not have to be replaced several times during the lifecycle of a building. This characteristic has a very positive effect on the life cycle assessment (LCA) of a building. ALUCOBOND® provides architects and planners with a high degree of reliability and therefore planning security because of its very long service life and usage period.

Tour Elithis, France
XTU Architects
© Elisabeth Leblanc

CoMED, Austria
ad2 architekten
© Herta Hurnaus

Paläon, Germany
Holzer Kobler Architekturen
© Jan Bitter

The advantages of an ALUCOBOND® CRF façade

Sustainability / cost-effectiveness

- Long-term value retention and increase in value of the building
- Low lifetime costs due to minimal maintenance and servicing requirements
- Low damage susceptibility of CRF systems
- Possibility of reuse and return to the reusable material cycle
- Easy dismantling
- Take-over of substructure when renovating existing buildings

Energy efficiency

- By using innovative ALUCOBOND® systems (e.g. easy fiX), the U value can be reduced by approx. 25 %, and the U value of the aluminium sub-structure by approx. 45 %.
- Protection from heating the interior of the building in summer, protection from cooling and heat loss in winter
- Optimum room climate, favourable vapour diffusion behaviour (no condensation formation)

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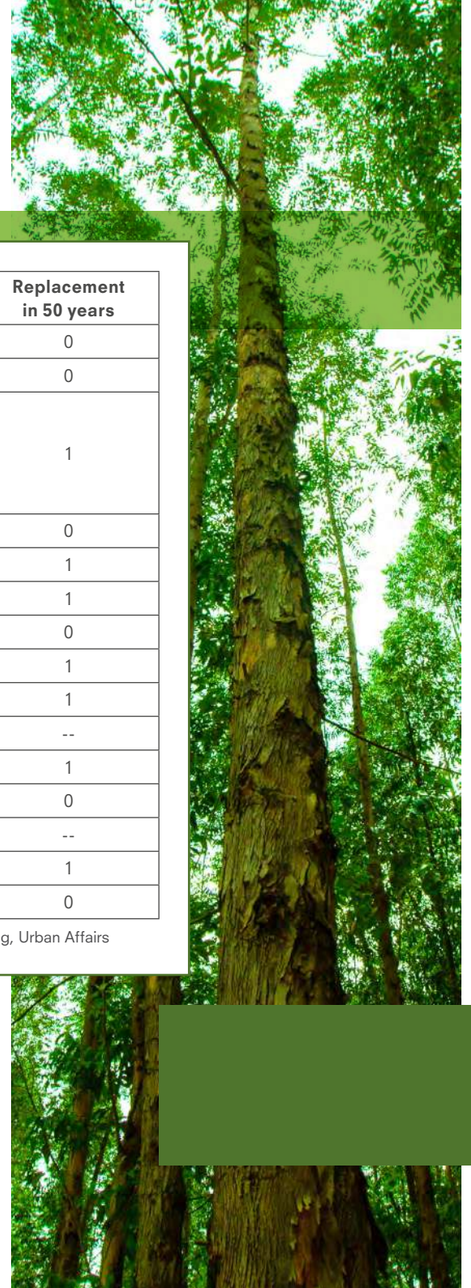
1969 Realisation of the first small façade project: C&A Brenninkmeyer in Leverkusen, Germany – very simple cladding with unformed panels

Material	Service life in years according to BNB*	Replacement in 50 years
ALUCOBOND® aluminium composite material	≥ 50	0
Solid aluminium material	≥ 50	0
Thermal insulation composite system: mineral wool insulating panels, polystyrene insulating panels, polyurethane insulating panels, wood fibre insulating panels, wood wool lightweight construction panels and cork panels	40	1
Fibre cement	≥ 50	0
Thermal insulation composite system with render	30	1
Galvanized steel	30	1
Glass facing shell	≥ 50	0
Polycarbonate plastic panels	30	1
Resin composite panels (HPL)	30	1
Rock wool panels	N/A	--
Render on porous base layer	40	1
Ceramic plates	≥ 50	0
Glass fibre concrete	N/A	--
Untreated coniferous wood	30	1
Natural stone	≥ 50	0

* Assessment System for Sustainable Building of the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR)

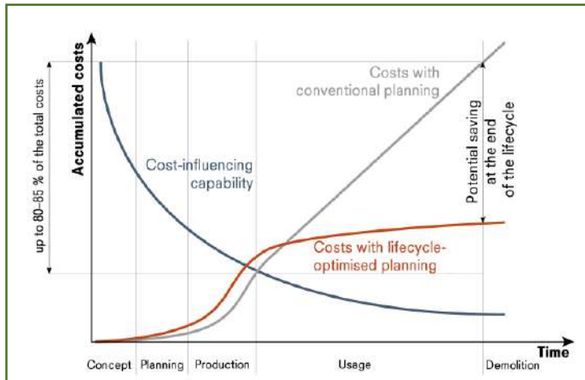
ALUCOBOND® has an Environmental Product Declaration (EPD) in accordance with international ISO standards, which certifies a service life of 70 years.



Which costs can be expected during the operation of the building?

Forward-looking planning makes high cost savings possible during the entire usage period of the building. The Lifecycle Cost Analysis (LCCA) instrument has been developed for quantifying and evaluating these savings. It involves determining the costs which a building causes during its lifecycle. The total costs over the entire usage period are influenced by correct selection of the façade material and system. At the same time, this selection makes a contribution to sustainable use of the building.

ALUCOBOND® is extremely resistant to the effects of the weather, sunlight and soiling due to the use of high-quality fluoropolymer paint systems (e.g. PVDF / FEVE). The surface can be given a thorough cleaning using basic cleaning products if required.



* Jones Lang LaSalle (2008): Green Building – Sustainability and Preservation in the Real Estate Industry, ed.: Jones Lang LaSalle, 2008

More information can be found in the "Sustainable Building" guideline from the German Federal Ministry of the Interior, Building and Community.

The cost trend during the usage phase of the building is influenced in a very positive way with ALUCOBOND®:

- Support during planning by means of intelligent tools and services
- Use of the energy-efficient CRF façade system
- Low use of resources (including investments in machinery), simple and cost-effective processing of the ALUCOBOND® panels
- Less waste due to efficient panel utilisation
- Very long cleaning intervals

Demolition & recycling

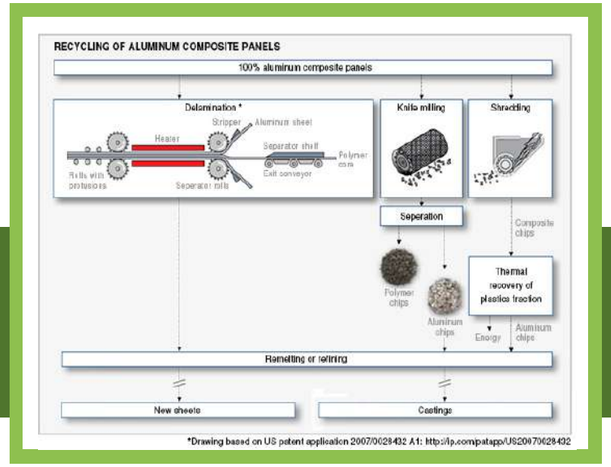
Demolition of an ALUCOBOND® façade

An ALUCOBOND® façade is economical until the final day of its use.

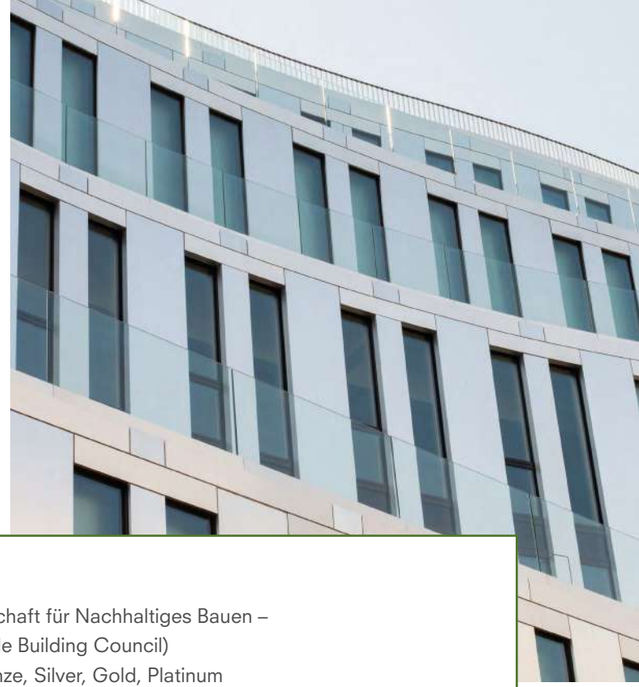
All CRF façade components, including ALUCOBOND®, can be easily and homogeneously dismantled and returned to the reusable material cycle.

ALUCOBOND® is 100 % recyclable, i.e. the core materials and aluminium cover sheets are returned to the material cycle and used to produce new material. It is the high material value of aluminium which provides the most important recycling impetus for the economy. Aluminium is recyclable to an unlimited extent without losing its characteristics. Only five percent of the energy that would be needed for primary manufacturing is needed to melt scrap.

With ALUCOBOND® at least 90 % is now already returned to the reusable material cycle without down-grading. Therefore, an ALUCOBOND® façade can be regarded as passive storage of reusable material on the building which generates additional revenue at the end of its use and conserves resources.



Building certifications



Global building certification

The certification of buildings is an instrument which has established itself worldwide for evaluating and encouraging sustainable building.

The following systems exist worldwide for this certification:

DGNB
(Deutsche Gesellschaft für Nachhaltiges Bauen – 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 – High Environmental Quality Standard)
Certifications: Pass, Good, Very Good, Excellent, Exceptional
www.behqe.com

Global certified ALUCOBOND® projects

25hours Hotel
in Düsseldorf, Germany
DGNB Gold Certificate
ALUCOBOND® A2 Anthracite Grey,
Anodized Look C32 + C0/EV1
© Andreas Horsky

BskyB Believe in Better Centre
in London, Great Britain
BREEAM® Certificate Excellent
ALUCOBOND® PLUS Sunrise Silver Metallic
© Simon Kennedy

Orona
in Hernani, Spain
BREEAM® Certificate Excellent &
LEED® Certificate Gold
ALUCOBOND® naturAL Reflect
© Agustín Sagasti

Chevaleret
in Paris, France
NF HQE™ Certificate Level Excellent &
BREEAM® Certificate Very Good
ALUCOBOND® Grey Metallic
Architects Archigroup (renovation) / Novarina
© Milène Servelle

Data for ALUCOBOND® can be found on the DGNB Navigator, among others:
www.dgnb-navigator.de/Company/Products/3AC

and on Building Material Scout:
www.building-material-scout.com/en/

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VIEW
in Paris, France
NF HQE™ Certificate Exceptional &
BREEAM® Certificate Excellent
ALUCOBOND® PLUS naturAL Line
© Baumschlager Eberle Architekten & Ooshot

NuOffice
in Munich, Germany
LEED® Certificate Platinum
ALUCOBOND® PLUS Royal Cedar
© Hubert Haupt Immobilien Holding e.K. & Katzer

Partnerships & associations

Mitglied der DGNB
Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council

EUROPEAN ALUMINIUM

FVHF®
WIR SIND MITGLIED

Institut Bauen und Umwelt e.V.

asefave
ASOCIACIÓN ESPAÑOLA DE FABRICANTES DE FACHADAS LIGERAS Y VENTANAS

ecca
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Aluminium
AUF
Wertstoffkreislauf

GDA
GESAMTVERBAND DER ALUMINIUMINDUSTRIE e.V.

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