

Sustainability



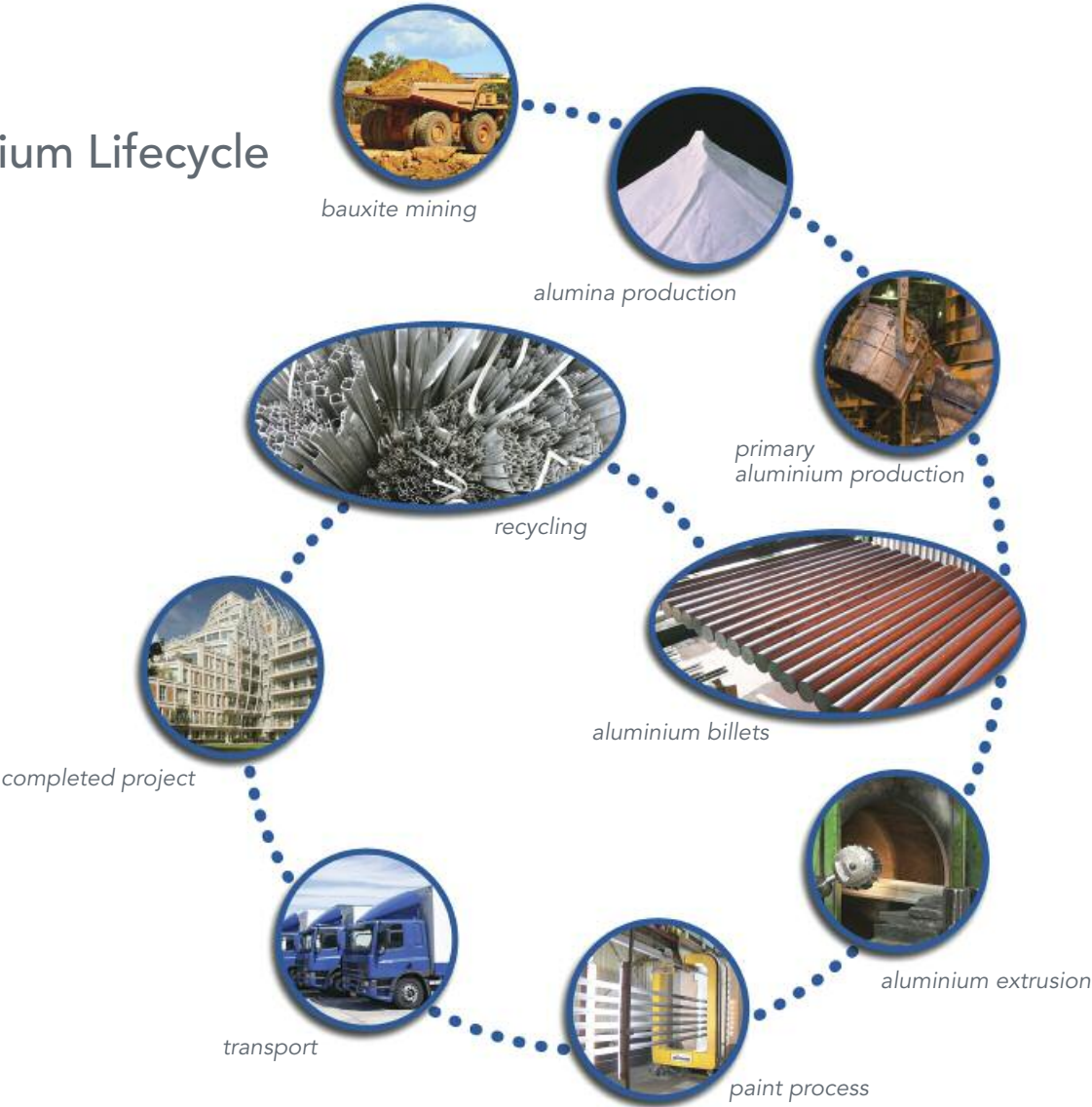


The Shields Centre, East Pollokshields, Glasgow
Architect: Anderson Bell Christie Architects

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Aluminium Lifecycle



Aluminium production begins when bauxite, an ore rich in aluminium oxide, is mined and turned into alumina. Alumina is a sugar-like white powder produced by grinding the bauxite ore and mixing it with lime and caustic soda, subjecting it to high pressure and heat. Alumina becomes aluminium in an electrolytic reduction process known as smelting. The newly produced aluminium flows from smelting pots into furnaces for precise mixing with other metals to form various alloys with specific properties, designed for particular uses.

The metal is purified in a process called fluxing, then poured into moulds or cast directly into ingots. Raw aluminium billets are then formed from the ingots, ready for our production process.

We firstly heat the billet before we load it onto the extrusion press. The required profile is then extruded through a die and

left to cool. We then ensure the profile is perfectly straight through a stretching technique. Profiles are subsequently cut to the specified length and go through an age hardening process to improve strength. Kawneer manufactures around 1500 individual profiles.

Profiles are then submerged in various pre-treatment tanks and then spray painted through our paint booth with a resin-based polyester powder paint. They continue through a curing oven and are left to cool. After careful quality inspection, they are ready for fabrication into Kawneer products. After packing, the finished products are loaded onto trailers and shipped out to our dealer network and installed on buildings. When completed buildings end their useful life, the aluminium in Kawneer products can be recycled to ultimately form new billets and a whole new product life cycle commences.

We're helping to build a greener world



The environment, and our impact on it, is of vital importance to us all. But there's more to sustainability than just being green. While striving for environmental excellence, at Kawneer we also use our values to build financial success and meet our social responsibilities, delivering long term benefits to our people, customers, suppliers and our local communities. As part of Arconic, a leading supplier of architectural systems, services and building products, that philosophy is implemented on a global scale.

Phil Randles Managing Director, Kawneer UK

Our Strategies

Alcoa is one of the world's top sustainable and low-carbon pioneering companies. We have long term goals to re-use or recycle 75% of wastes by 2020 and 100% by 2030, as well as to reduce average water use intensity by 25% by 2020 and we continue to reduce our greenhouse gas emissions.

As a group, we're also committed to a climate change strategy that takes into account the potential impact of our business plans, aiming to mitigate carbon risk while maximising business opportunities. We also have a firm policy on sustainable energy use wherever possible, from biodiesel to wind and solar installations, and in particular hydro-electric, which powers around 62% of our smelter output worldwide.

Landmark Recognition

In fact, Alcoa was the first aluminium company to have its primary aluminium Cradle to Cradle® Certified – in recognition of the sustainability of our product and the practices employed in its manufacture, including social responsibility.



To that end we have various programmes including Ten Million Trees, developed from a highly successful scheme to plant a million trees in ten years and now aiming to plant ten million worldwide by 2020; and our Make an Impact programme in Australia, in which over 1000 employees have dramatically reduced their household water and energy use.

The Sustainable Building Material

In terms of sustainability, aluminium is one of the best materials available. Aside from its practical and energy-saving advantages in construction, it can be recycled repeatedly without loss of properties using just 5% of the energy originally used to mine, smelt and produce it. Aluminium's natural strength, lightness and durability makes it the ideal material for meeting architects' glazing requirements.

World Wildlife Fund – UK Headquarters, Living Planet Centre
Architect: Hopkins Architects



Sustainability at Kawneer



Bauxite mining before rehabilitation



Bauxite mining site after rehabilitation



Aluminium billets

At Kawneer, sustainability is defined as using our values to build financial success, environmental excellence, and social responsibility through partnerships in order to deliver net long-term benefits to our shareowners, employees, customers, suppliers, and the communities in which we operate. We are dedicated to developing high-performance, sustainable buildings.

Aluminium is attained from the natural resource bauxite through an electrolytic process. The bauxite is mined, only 5km² at a time and all the flora and fauna indigenous to the area are replaced through a rehabilitation process.

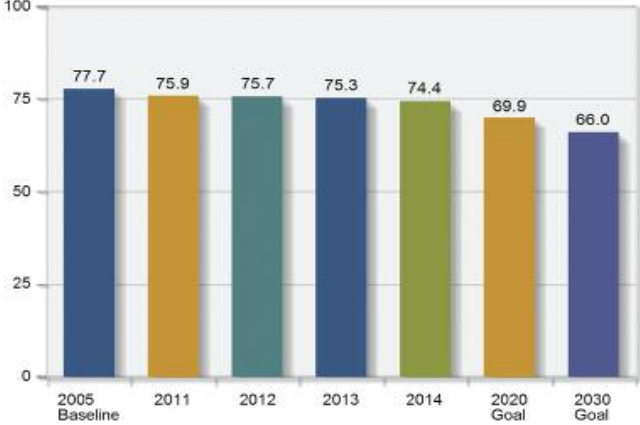
Kawneer is committed to using recycled billets where possible. Because aluminium does not rust, decay, or lose its quality, it can be recycled repeatedly without loss of properties.

Alcoa continues to design new processes with energy conservation and waste minimisation as our long-term goal.

Efficient use of resources and effective control of energy, landfilled waste and water drive improved environmental performance.

Energy Intensity - Global Primary Products

Alcoa is committed to reducing its energy requirements.



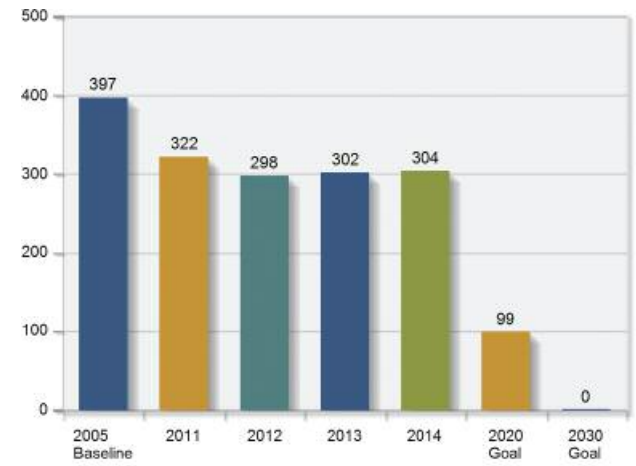
Goal: 10% reduction Progress: As of Dec. 2014 ↓ 4.2%
(Gigajoules per metric ton of aluminium produced)

The energy intensity values have been adjusted to reflect the net energy value after energy sold to the grid, which is a change in the energy intensity calculation methodology used in the past. This impacted the 2005 baseline and years forward.

Landfilled Waste

Alcoa's current strategic target is a 75% reduction in landfilled waste by 2020 and 100% by 2030 from a 2005 baseline.

In 2014 we saw a very slight increase in landfilled waste primarily due to waste generated during construction activities in our rolling mill in Tennessee, USA. Since 2005 we have achieved a 23% reduction.



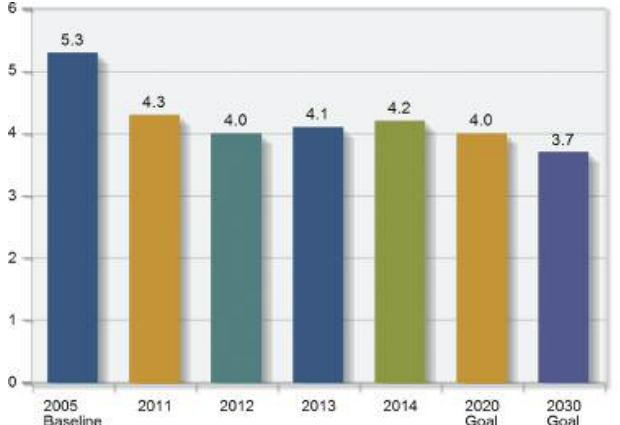
Goal: 75% reduction Progress: As of Dec. 2014 ↓ 23%
(Thousands of metric tons)

Water

Alcoa's goal is a 25% reduction in average freshwater-use intensity by 2020 and 30% by 2030 from a 2005 baseline.

In 2014 our intensity was 21% lower than the baseline but slightly higher than 2013 despite a 3% decline in total freshwater use during the year. Drought conditions in Jamaica and higher production and cooling needs at our Mosjøen location in Norway were the primary factors behind the intensity increase.

Freshwater-Use Intensity



Goal: 25% reduction Progress: As of Dec. 2014 ↓ 21%
(Cubic meters of water per metric ton of production)

Water usage from power utilities is excluded from the intensity metric, which reflects only our manufacturing operations. Because of the variability in the basis for measuring production in our businesses, these values represent a metric calculated by taking each business intensity measurement indexed proportionally for production.

Kawneer Sustainability Approach



2014 ALCOA SUSTAINABILITY HIGHLIGHTS

- Our absolute greenhouse gas emissions declined by 3 million metric tons, or 6.8%, in 2014.
- We were included in the Dow Jones Sustainability Indexes for the 13th consecutive year.
- We unveiled the Alcoa Micromill™ technology, which will manufacture the most advanced aluminium sheet on the market.
- We introduced the Ultra ONE™ heavy duty truck wheel, which is 47% lighter than a steel wheel of the same size.
- We had zero employee fatalities and one contractor fatality.
- For the second year in a row we were named the world's most active organization by the Global Corporate Challenge.
- Alcoa and Alcoa Foundation invested US\$38.4 million in community programs.

Eastern Gateway Building, Brunel University, Middlesex
Architects: YRM Architects and Architeknik Architects





London Designer Outlet, Wembley, North London
Architect: Leslie Jones Architects
Photo: London Designer Outlet

Approach to Sustainability



At Kawneer we take all our responsibilities very seriously. We're dedicated to creating products and systems that promote integrated, whole-building design practices.

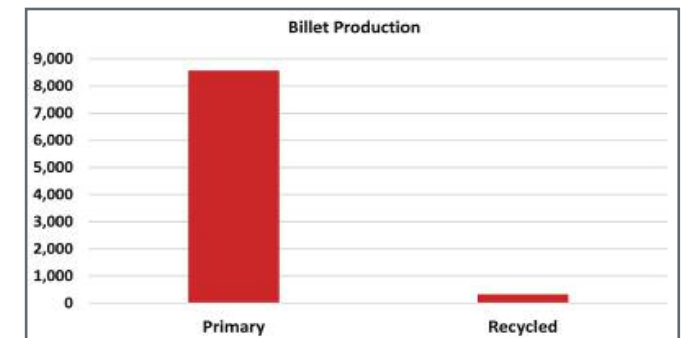
We continuously review the impact of both our products and our working practices to set new industry standards and we also recognise the responsibility we have to our people and to the communities in which we work.

We have developed leading-edge production techniques to ensure that manufacturing efficiency is optimised, and environmental impact is minimised. Our right-first-time quality management systems have been devised to minimise waste and exceed the requirements of current ISO 9001 standards.

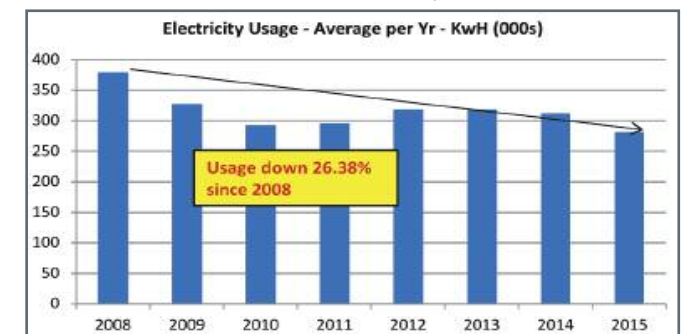
There are a number of ways in which we continue to reduce our impact on the environment. Here are just a few:

- For our own production, we use recycled aluminium billets 100% of the time and all of our production waste is recycled back to a smelter to be re-used.
- By having extrusion, paint and thermal break rolling all under one roof, the number of miles our products travel in the supply chain is at a minimum.
- Our high quality polyester powder paint finishes are produced on our behalf by AkzoNobel, a global company with an equally impressive commitment to sustainability.
- At Kawneer UK, a focused site-wide team has reduced average power consumption by 26.38%, gas consumption by 33% and water intensity usage by 83.77% since 2008.
- Kawneer is accredited to Environmental Standard – ISO 14001 (2004 Version). The sales, design, manufacture and supply of aluminium architectural products.
- Kawneer is accredited to BES 6001 – Responsible sourcing of construction products.

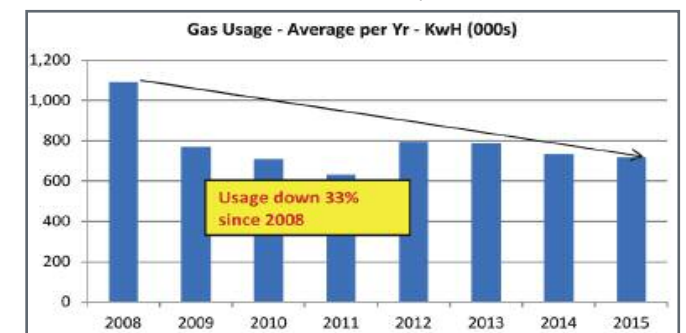
Comparison of energy used to produce one tonne of primary aluminium and one tonne of recycled aluminium – GHG kg CO₂ equivalent per tonne.



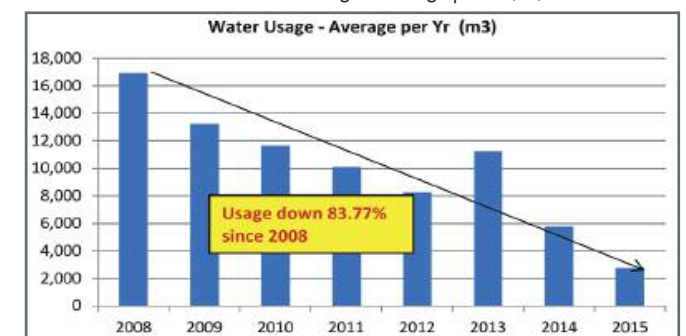
Kawneer UK Electricity Usage - Average per Yr - Kwh (000s)



Kawneer UK Gas Usage - Average per Yr - Kwh (000s)



Kawneer UK Water Usage - Average per Yr (m³)



Social



Kawneer employees working at Daresbury Primary School

Our impact on the people and communities within which we work is just as important as our impact on the environment. We realise that as a company we have a responsibility to make that impact positive. So wherever we work, we maintain our strong core commitment to integrity, accountability and transparency in our dealings with customers, suppliers, our people and the local communities.

We're resolute in working safely to protect and promote the health and well-being of individuals and the environment, with effective safety systems that identify hazards and risks and develop appropriate controls, constantly monitoring and improving any gaps in the protection provided.



Kawneer employees assisted the Castlefields Regeneration Programme team at Phoenix Park with essential maintenance work



Kawneer employees helping to develop the 'Men's Shed' project at Halton Haven Hospice

And at a local level, we develop partnerships with community organisations to support and fund projects that address community needs and generally make a difference through the Alcoa Community Framework and Alcoa Foundation.

In the past 5 years the Foundation has donated over \$140,000 to local schools and organisations in the Cheshire area to support our local community and invest in the community in which we operate in. For the last 2 years the Alcoa Foundation has supported Halton Haven Santa Dash with Kawneer employees participating. As part of our community commitment every October community projects benefit from the help of Kawneer UK volunteers and Alcoa Foundation grants.



Kawneer employees working at Victoria Road Primary School

Environmental Solutions

With the publication of the 2013 versions of Approved Document L and Scottish Building Standards Part 6, the demand for green building solutions is increasing. Aluminium is the ideal material to meet that demand, offering unique advantages in appearance, finish and sustainability. The journey to zero carbon buildings has begun.

At Kawneer, we're dedicated to creating products that help comply with BREEAM standards and promote integrated whole building designs; and with 95% of aluminium in buildings being recycled, architects can design with cradle to cradle lifecycles in mind, helping them achieve green building standards.

The systems we've developed enhance energy efficiency, reduce carbon emissions and, being weatherproof, corrosion-resistant and immune to the effects of UV rays, offer optimum performance over long periods. They also improve comfort levels for the building's occupants, through natural ventilation, direct access to daylight and improved outdoor views.

At Kawneer we use recycled aluminium billets 100% of the time, and our extrusions carry a life expectancy of 50 years, significantly higher than other materials – and of course they're 100% recyclable. Our standard Powder Coat Finish is guaranteed for 30 years.

The **Building Research Establishment Environmental Assessment Method (BREEAM)** has been designed to help developers and designers prove the environmental credentials of their buildings to planners and clients. It assesses a building against set criteria for materials and methods and provides an overall rating from a Pass to Outstanding. To make these assessments, the BRE produces the Green Guide to Specification, giving each material or method a rating based on 13 impact categories and measured from A+ to E (A+ being the best).

Examples of Kawneer UK Sustainable Solutions

High Thermal Efficiency

To maximize energy use and comply with the latest Approved Document L and Scottish Building Standards Part 6 2013 regulations, Kawneer has developed a range of high performance Window, Curtain Wall, Framing and Door Systems using the latest thermal break technology.

'A' Rated Window Systems. * The AA®541 Casement, AA®542 Pivot and AA®543 Tiltturn Windows correspond to the BRE Global Green Guide online generic specification for windows and achieve a summary rating of A+ for non-domestic schemes*. The windows have been designed with aesthetics and energy efficiency in mind to ensure compliance with today's stringent performance requirements.

* www.thegreenguide.org.uk Element Number 1231500011

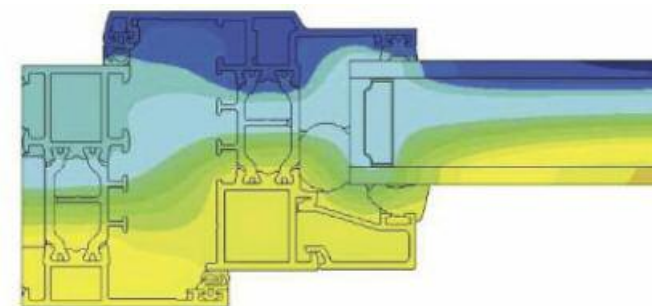


Diagram shows results of thermal simulation of our AA®541 Casement Window

Reduced Solar Heat Gain

Kawneer's Curtain Wall, Window and Framing Systems can accommodate our AA®130 Brise Soleil System, which adds a stunning design statement to the building facade; optimising the natural daylight within a building whilst limiting the solar heat gain and glare to provide optimum comfort for residents.

Optimum Ventilation

The AA®3610LS Linked Sash Vertical Sliding Window has been designed to offer maximum ventilation with performance and aesthetics in mind. The ease of operation coupled with the air flow makes this window ideal for schools and hospitals. The AA®3610LS is a unique solution which opens the top and bottom sashes simultaneously, allowing stale air out of the top of the window whilst allowing cool fresh air to be drawn in via the bottom.

Offsite Construction

Our modular facade solutions, AA®201 and AA®265 Unitised Curtain Walling, are high-quality, highly innovative concepts. The individual units or panels are assembled off site in factory-controlled conditions and then transported to site and craned onto the building giving the building team a unique set of benefits.

A Kawneer UK Sustainability Brochure can be downloaded from our website: www.kawneer.co.uk



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Other brochures available on request from Kawneer are:

- Architectural Aluminium Systems Finishes
- Door Systems
- Framing Systems
- Curtain Wall Systems
- Unitised Curtain Wall Systems
- AA®130 Brise Soleil System
Solar Shading for Reduced Solar Heat Gain
- Window Systems
- Door and Window Sliding Systems
- Residential Aluminium Glazing Systems
- Specialist Horizontal Sliding Window Solutions for your Healthcare Project
- Fire Resistant Systems
- The Architects Guide to Aluminium in Building
- Maintenance and Cleaning



Kawneer's continuous development and engineering programmes may bring about product changes. Kawneer reserves the right to introduce without notice such changes which will not detract from the product's performance
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