

## **TURNING OVER A NEW, SUSTAINABLE LEAF**

**By John Stamp, technical consultant, Kawneer architectural aluminium systems**

Sustainable development is still largely defined as that which “meets the needs of the present without compromising the ability of future developments to meet their own needs,”\* and there are signs that specifiers are increasingly moving from making decisions on materials purchase based on capital costs to those made with whole life costs in mind.

This may well have partly been prompted by developments such as the holistic approach that the new Part L Building Regulations have taken, the Government’s Code for Sustainable Buildings and DEFRA’s sustainable procurement taskforce.

But political correctness aside, this is where the economic benefits of sustainability come into their own. All the specifier has to do to compare options is run through a three-point checklist - assess the objectives (like the desired level of thermal performance), the constraints (like safety or aesthetics), and the assumptions. This is where manufacturers who have to hand information on their product’s sustainability will obviously be a step ahead at this point.

Specifiers in the construction industry have a raft of decisions to make because the versatility of aluminium means it can be used in such a diverse range of applications - curtain walling, structural glazing, doors, windows, roofing, cladding, architectural hardware, heating and ventilation, shopfitting and partitions and modular buildings.

Manufacturers therefore are coming under ever-increasing scrutiny as to how their products and systems are sourced, manufactured, distributed, applied, and disposed of or recycled, and how they advise the people who specify and use their systems. Kawneer’s parent company Alcoa is one of the world’s top 3 sustainable and low-carbon pioneering companies, and has pledged to be greenhouse gas-neutral by 2020.



Kawneer managing director David Shuttleworth said: "At Kawneer, minimising the environmental impact of our products and operations has been a priority for many years and is enshrined formally in our group code of practice. We are encouraged that these topics are now being taken more seriously by the industry at large."

Aluminium companies have invested in dedicated, state-of-the-art secondary metal processing plants to recycle aluminium, to the point where some do use recycled aluminium billets 100% of the time. In the case of drinks cans, the recycling process uses gas collected from burning off the volatile substances in can coatings, to provide heat for the process. Every last bit of energy is used.

The aluminium industry has come a long way since the existence of the metal was established only 200 years ago. It took another 50 years or so to develop the first commercial processes that make it the lightweight, non-corrosive and versatile material it is today and 24million tonnes of it are now mined globally every year.

An abundant material, the world's known deposits of the virgin material - bauxite - are sufficient to support the current production rate for several hundred years and where it is mined, great care is taken to reinstate the land. In rainforest areas, only 5km<sup>2</sup> is mined at any one time and it is restored with indigenous flora and fauna. Kawneer's parent company has itself planted more than one million trees.



*Before*



*After*



Although an energy-intensive process, more than 60% of the electricity used to produce aluminium is generated by hydro-electric power – in itself a sustainable process - and the primary smelters that refine alumina into aluminium use extensive pollution-control equipment.

Re-smelting aluminium saves up to 95% of the original energy needed to produce the product and the recycling rate of used aluminium products in building is currently 80% (compared to 95% in transportation and 30% in packaging).

The huge benefit to aluminium is that it is not impaired by recycling and unlike other metals, the scrap has significant value, so significant the London Metal Exchange quotes aluminium scrap prices.

And as the overall market for used aluminium is growing, the more aluminium a product contains, the more likely it is to be recycled. Contrary to popular opinion, even coated aluminium can be recycled, helping some 30% of the aluminium used in Europe in 1997 to come from recycling.

Recycling 1kg of aluminium can save up to 8kg of bauxite, 4kg of chemical products and 14kW of electricity. Today's aluminium can contains about 40% less metal than the can made 25 years ago, hence the need for less energy and less raw material per can.



More than any other material, aluminium is capable of being extruded into complex shapes and to exact tolerances. Other metals such as steel can be extruded but require enormous pressure to pass through the die, rendering all but a few simple extrusions uneconomic.

It can also easily be integrated into other sustainable building technologies such as double glazing, sun shades/louvres and photovoltaics.

At present, 40% of the UK's annual production of aluminium is used within the construction industry, which equates to approximately 150,000 tonnes per annum, of which approximately 65,000 tonnes is extruded products and 25,000 sheet materials.



Unlike many recycling schemes where the scrap material is rarely re-used for the same application, being downgraded to an application requiring lesser metallic properties, aluminium in windows, for example, can be recycled to make new aluminium windows.

A framing system like Kawneer's AA@4001, for instance, is manufactured from aluminium sections which are 100% recyclable, with 70% of the aluminium used in the system having been reclaimed, retaining 95% of the initial energy invested.

This system has been used at the Mundy School in Derbyshire which was modelled on the DfES Exemplar Schools and is proving a showcase for CLASP and BSF through its use of natural light and ventilation through the design of features such as vents.



A showcase also for sustainability.

\* *Bruntland report*

ENDS

For further information, please contact:

**Jane Ashley @ Kawneer**

**T** 01928 502500

**F** 01928 502526

**E** jane.ashley@alcoa.com

**W** www.kawneer.co.uk

