

From silver to green

Scrap aluminium has long been recognised for its ability to be easily collected and recycled into new aluminium products. Together with its high scrap value, aluminium is rarely wasted as it feeds back via well-established recycling processes, writes CAB director Adrian Toon

The EAA/Delft study back in 2004 confirmed that between 92% and 98% collection rates at the time were achieved in the UK's building demolition. What is less well known is that if not appropriately separated and sorted, collected scrap can include a mix of various aluminium alloy grades. While this mixed recyclate may be used for cast aluminium products, for example, it is usually harder to recycle it into wrought aluminium alloy grades in a 'closed loop'. Add to this, it is known that a lot of our valuable scrap metals are shipped overseas, thus losing a very valuable resource from the UK.

With these issues in mind, the Council for Aluminium in Building has set up a *Closed Loop Recycling* initiative for the UK. The aim of the initiative is to encourage the recycling of aluminium alloys within the same alloy grades. For the CAB scheme we require that extrusion grades of aluminium, namely 6xxx series alloys for the architectural aluminium market, are recycled back into the same 6xxx series alloys. The same can be said for sheet aluminium recycling, namely with 1xxx series alloys. It is important to reiterate that in a 'closed loop', an aluminium alloy can be recycled infinitely without loss of its specific characteristics.





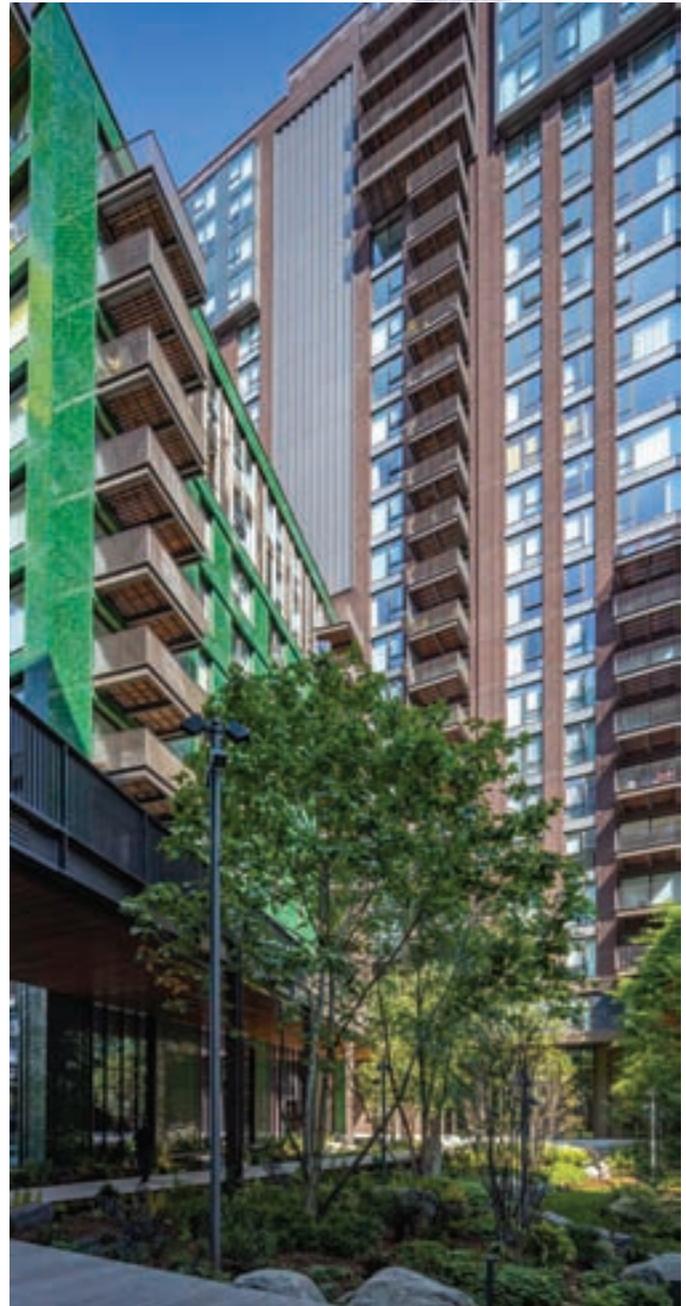
Pre-consumer scrap can easily be recycled before it leaves the factory as it is often clean and of a known alloy. Post-consumer scrap is where the challenge really lies. With the many thousands of tonnes of alloy extrusion and sheet used in our buildings across the UK, we should be looking towards the advantages of deconstruction, separation and recycling, and the ability to see our built landscape as an ‘urban mine’ for raw materials. As already stated, we have recycled aluminium over many decades, primarily as it has a high recycle value, but without a ‘closed loop’ we can ‘lose’ the specific grades we require to recycle the aluminium back into the same product type. If we constrain recycling to specific alloy grades, we can recycle extrusions back into new extrusions and offer a true circular economy for our aluminium products in the UK construction industry.

One of the keys to this capability is the advent of the handheld spectrometer for identifying the content of an aluminium alloy. Easily portable and very quick to use, grades can easily be checked prior to recycling. This means that the aluminium grades could easily be checked and identified on a building site prior to deconstruction. The quantity available on a given site can also be relatively easily calculated before removal, as aluminium extrusions and sheets are usually uniform in shape and easily measured. Skips for the scrap, clearly labelled for the identified grades being removed, can be obtained from recyclers to be placed on site for collection of this valuable post-consumer scrap.

The second challenge is to remove non-aluminium components from the aluminium frames of windows and curtain walling, such as hinges, handles, gaskets, screws and weather seals. Done manually, this could take some time, and we must also consider the removal of thermal breaks made of materials such as polyamide and polyurethane. Fortunately, the technology has advanced considerably, and this process can be completely automated. What is supplied back to the smelter is ‘chipped’ aluminium, with minimal contaminants such as paint and thermal breaks which are mostly removed in the process.

Aluminium scrap in this form can easily be reintroduced back into the UK aluminium smelting industry to meet the growing demand for aluminium. With just 5% of the energy needed to recycle aluminium in this way compared to producing prime aluminium from bauxite, we can make best use of the embodied energy present in aluminium that exists in our building stock.

CAB’s Closed Loop Recycling Scheme is open to



members as part of their membership package. While such closed loop recycling of construction materials is currently voluntary, requirements could be placed on ‘embodied carbon’ content in the future and main contractors are increasingly seeking evidence to demonstrate the sustainability credentials of their supply chain. Aluminium scrap is an important resource and we should maximise the quantity and quality of recovered aluminium scrap in the UK to build the circular economy of the future. □

Adrian Toon is member of the CAB board

Despite the pandemic, it is business as usual at CAB and staff are on hand at the offices to answer any aluminium fenestration related questions. Information is regularly updated on the CAB website at www.cab.org.uk. For association membership enquires please contact Jessica Dean at the CAB offices by email jessica.dean@cab.org.uk Tel: 01453 828851