

UK

SUPPLEMENT

Metals for the future: Creating a circular economy for aluminium

By **David Sneddon***

As one of the most recyclable materials on the planet, aluminium offers us one of the most direct ways to decarbonise our lives – it is almost infinitely recyclable like gold, without degrading like steel, and in the process of recycling, it can be turned back into useable products with a tiny proportion of the energy of new material, again unlike glass and steel.

However, the UK is currently reliant on an unsustainable material and energy-intensive supply chain based on a practise of exporting scrap and slabs and importing huge quantities of sheet and billet.

With manufacturers increasingly concerned about scope 3 emissions and the security of their supply chains, the UK must reconsider its approach to aluminium production and recycling; we must create a closed-loop, circular economy for aluminium sheet in the UK for UK industry and consumers.

We have a solution, and it's backed by some of the biggest companies in the world. We are the British Aluminium Consortium for Advanced Alloys (BACALL), and we will localise aluminium recycling and manufacture.

The sustainability case

The whole supply chain for prime aluminium production, from bauxite mining to smelter, is a sustainability problem. Alumina production and smelting prime are energy intensive processes with high carbon emissions, particularly where the electricity used in the production comes from fossil fuels.

In addition to this there is little or no visibility of supply chain emissions and accredited material sourcing for end clients. Clients cannot plan when they don't know how much prime they receive and when.

The UK's industrial position on aluminium is very vulnerable. Several large and important plant closures over the last 15 years have left the UK dependent on plants either in Europe or further.

The recent interruptions in supply chains amplified this danger. Current figures suggest that approximately 1.2million tonnes of aluminium scrap is imported to the UK whilst 800,000 tonnes of aluminium are exported.

As the industry recycling champions have been repeating for many years - aluminium offers up to 95% reduction in energy, while maintaining the metal quality through recycling.



Making aluminium sheet in the UK, from UK recycle, would reduce embedded carbon in UK-made cans and vehicles by some 1 million tonnes CO₂eq. per annum per 100,000 tonnes recycled.

But in order to fully realise this benefit, reduce manufacturers scope 3 emissions, and help the UK to reach its climate goals, we need to recycle aluminium locally into sheet, so that the finishers of cans and cars have a chance not just to survive but thrive. This means bold thinking and bold action. For this we created the consortium – a grouping of clients, of process and operational experts, of finishers, of

engineers, and of metallurgists who have done this job over and over for clients around the world. They have informed the way we move forward and how we can do this for the UK.

Currently, there is no plant in the UK capable of accommodating this model. But there will be. Our unique grouping of industry experts will support the aluminium industry's transition to a circular economy by building a new, innovative, digital-first facility that will reduce waste throughout the entire product lifecycle.

We will build a plant to roll hundreds of thousands of tonnes of aluminium sheet, in the UK using local material to make sheet for local clients. Local, local, local.

We will apply proven state of the art systems of scrap sorting, casting and rolling, integrating this into a state-of-the-art energy efficient plant.

And, through the integration of several processes that are typically dispersed, we can reduce the need for many energy-intensive re-melting steps and reducing huge amounts of stock.

Together, this will provide a substantial reduction in associated carbon emissions per tonne of product and provide an exemplar output of ultra-low embedded carbon sheet for UK clients.

Securing the strategic importance of aluminium to the UK.

The current model - relying on aluminium imports combined with an almost equal surplus of used aluminium end-of-life scrap that is exported for recycling abroad - is not only an environmental issue, but it comes at a substantial economic loss to UK PLC too.

As a sector, aluminium is equally important to the manufacturing economy as steel.

The future of UK car making and packaging lies in the future of ultra-low embedded carbon sheet to be made in the UK. That is tens of thousands of jobs and livelihoods as well as the interests of consumers and households in the UK. This

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is a matter of national industrial strategic importance as much as steel, semi-conductors or batteries.

Collecting, processing, and recycling the metal entirely within country will therefore be crucial as we consider its future viability. In doing so, BACALL will create and protect tens of thousands of jobs reshoring vital support engineering services and securing the materials, waste and recycling industries where we are global leaders. It will attract investment in upstream and downstream technologies such as engineering equipment, controls and digital systems, precision engineering of materials sorting and segregation, foundry materials, rolling mill systems, many of which exist in the UK but have hitherto exported to survive.

It is time for the aluminium industry to step up and be counted as a foundation industry of strategic importance to the UK economy, and essential to the futures of the large-scale UK automotive, construction and food and drink industries.

Through the embodiment of sustainable and generative thinking, the BACALL project is a significant step in future-

proofing the sector. So much so, Diageo recently announced its investment.

Diageo invests

Following the announcement by Diageo, life has changed for the project team that has been built up over the last seven years to deliver this most important change in UK metals industry. BACALL has been the brainchild of several members of the aluminium industry who have doggedly stuck to the simple plan to create a closed loop aluminium system in the UK with a recycling dedicated integrated plant to make sheet locally for local clients.

After years of working in confidence, gathering the many experts, advisors, and partner suppliers, it has come as a great relief to be able to talk openly in the industry and market about the plans and years of work, research, modelling and engineering that have led to the announcement. The industry has reacted very positively, for those in the know and to those to whom the announcement has come as a surprise, with many offering their support and engagement in the execution of what will be a complex fast

track build and commissioning exercise. Engineers have been busy across the world preparing for this next stage.

Since, several major players have joined the consortium to ensure the demand is there from day one, and lead by Diageo's example are readying the process to take the output material for many years.

Diageo hasn't just bumped into BACALL recently but has been involved for a number of years and was instrumental in supporting BACALL through its feasibility work and in the creation and gathering of the consortium; on top of this it has led the industry not only in publicly nailing its colours to the mast but in putting serious investment behind the project. Preparations are now in full flow. We look forward to sharing more with the industry, soon. ■