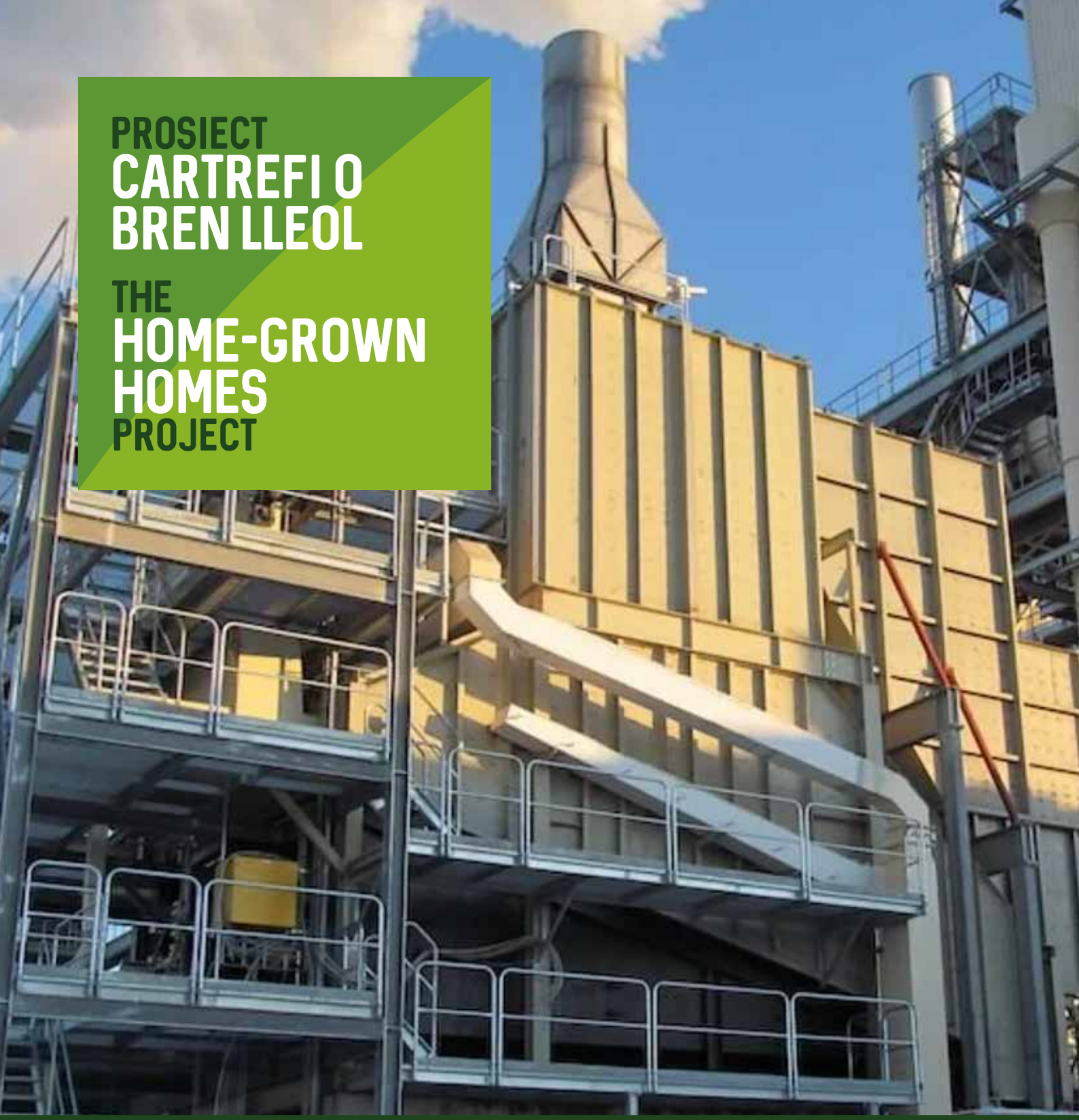


PROSIECT
CARTREFI O
BREN LLEOL

THE
HOME-GROWN
HOMES
PROJECT

CASE STUDY: CIRCULAR ECONOMY 1

Circular approach to panel production

woodknowledge WALES

Ariennir gan Lywodraeth Cymru
Funded by Welsh Government

KRONOSPAN

The UK's longest established manufacturer of wood-based panel products is adopting the three principles of resource circularity – reduce, reuse and recycle – at its north Wales manufacturing plant

INTRODUCTION

The UK's longest established manufacturer of wood-based panel products is adopting the three principles of resource circularity – reduce, reuse and recycle – at its north Wales manufacturing plant.

Kronospan's Chirk plant near Wrexham now has manufacturing processes which enable products to be made with 90% recycled content. Diverting wood-based material like unwanted furniture and pallets from landfill, enables it to be reused in another product, extending its life, ensuring the carbon captured by the growing tree and stored in the material isn't released into the atmosphere.

Kronospan's range of construction products is increasingly made from this recycled material supplemented by its onsite sawmill residue. Recent investment in processing equipment allows the raw recycled wood chip to be cleaned and separated so even higher proportions of recycled material can be used in its panel products. As a result, its end users are helping to contribute to the circular economy. And it means more homes and buildings in Wales are using home-made structural construction materials – materials manufactured closer to their end use, reducing the impact of transportation.

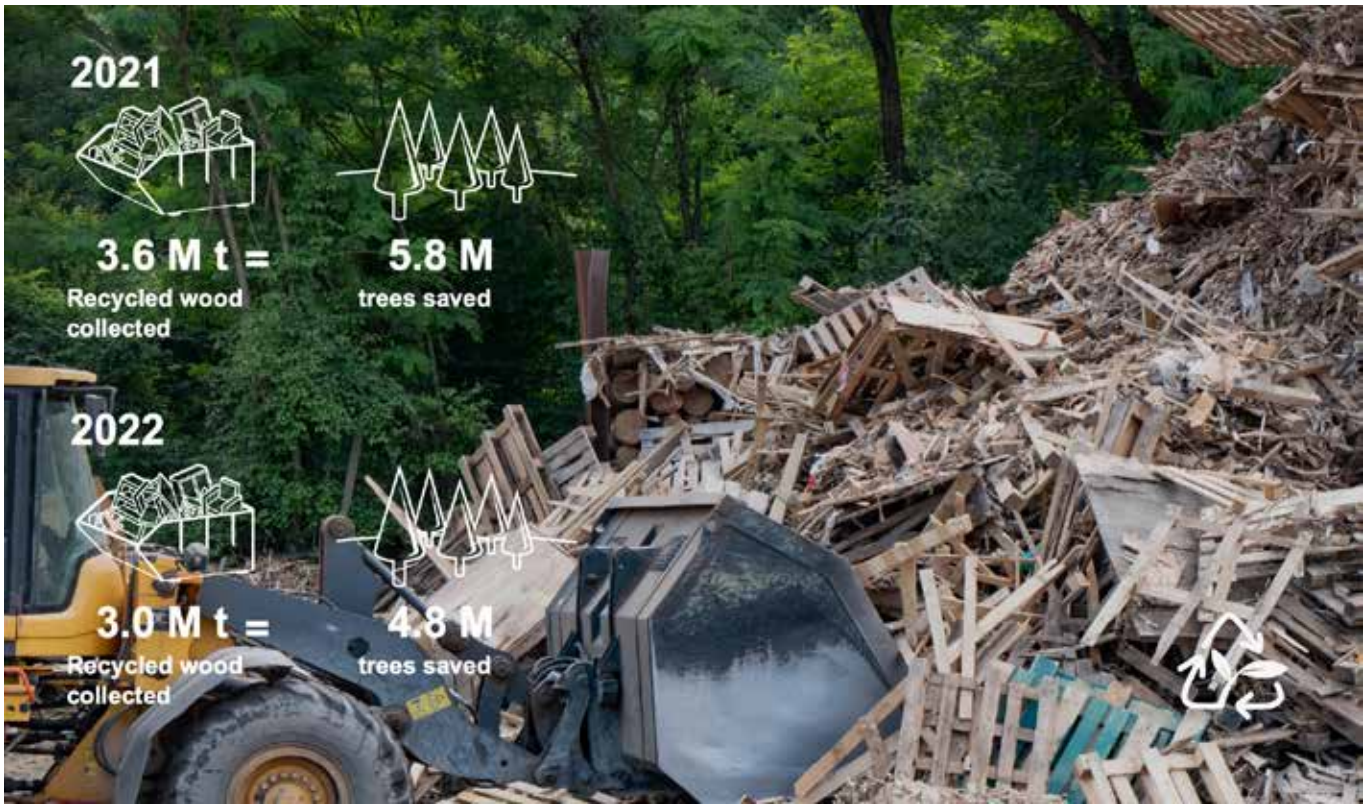
THE PLAYERS

The family owned Kronospan business started life in Austria and now has 40 plants in the UK, Europe and around the world. The Chirk plant was the very first overseas investment for the family and remains one of its flagship branches. Built in 1970, the multi-million-pound manufacturing facility with its new automated technology remains the only timber cleaning centre of its kind in the UK, processing 'post-consumer' waste (which contains plastic and metal in addition to timber) before recycling it in its products.

The company employs 650 staff, the majority locally, and manages 100 contractors on site every day. At the Chirk plant Kronospan manufactures particleboard and fibreboard, tongue and groove (T&G) flooring, laminate flooring and worktops. It also makes the resins for its wood-based panels. The plant incorporates a sawmill, resin manufacturing plant, pre-production and recycled timber processing, fibreboard and particleboard lines, melamine facing lines, storage capacity, biomass boilers and engines.

The company has increased the proportion of post-consumer waste it uses, from 60% in 2016 to 90%. Its post-consumer waste collection centre in Chesterfield carries out the first clean of the waste before delivery to Chirk. Here Kronospan clean it further to produce reusable material for its products.

NARRATIVE



Kronospan, a family-owned manufacturer in Wrexham, has three priorities when sourcing wood for its products. Its first choice is recycled wood, second choice is sawmill residue, and the third choice is sustainable forestry wood. The factory converts wood residues unsuitable for recycling (they may be too small, too large, or contaminated) to heat and power which is used both internally and for the benefit of the local community where possible.

Particleboard is a panel product increasingly made from recycled wood such as old furniture and supplemented by sawmill residue. By opting to use recycled materials in products, manufacturers contribute to the circular economy.

The Kronospan team use otherwise unusable, recycled wood to manufacture P5 particleboard, a load-bearing panel for use in dry and humid conditions. Made from 100% recycled material sourced from local authority collection sites across the UK, these boards are first sent to the manufacturer's primary cleaning facility in Chesterfield before arriving onsite at the Chirk plant. The newly installed, state of the art, processing equipment at Chirk then cleans the recycled material for a second time and separates it into materials suitable for panel manufacture. This second cleaning process removes over and undersized particles, metal, stones, laminate particles and other contaminants. Grading then sorts clean woodchip into the different sized materials used for making different layers in the finished board.

Wales, like the rest of the UK, needs to divert materials away from landfill. Taking wood-based materials and recycling them back into other products helps to make the most of our valuable resources (wood). It also keeps the carbon in that wood locked up for longer over the lifetime of these new products.

RECYCLING HOUSING ASSOCIATION WASTE TIMBER

A North Wales-based housing association approached Kronospan to recycle the wood-based materials removed from the association's homes. Instead of being burned, wooden furniture, kitchen units, skirting boards, doors and windows can all be recycled into products that could be used in new social homes. Currently collected by a recycling organisation, there is no oversight for the housing association around the end of life of these materials. By working with Kronospan directly, the association will have more control over what happens to its waste and improve its own end-to-end sustainability efforts. If Kronospan can work directly with more Welsh housing associations this will help lock-in carbon for longer in buildings. By minimising the need for timber imports from other parts of the UK or Europe, recycling will also reduce the number of raw material transportation miles.

Recycling and remanufacturing locally contribute to the circular economy and support local companies and local employment within the green economy.

ORIENTATED STRAND BOARD (OSB)

Originally developed as an alternative to plywood, Orientated Strand Board (OSB) was traditionally made in Europe from large diameter hardwood logs. Now, OSB can be made from smaller diameter softwood logs, similar to the species typically grown in the UK. These smaller diameter logsare not large enough for use as sawlogs. OSB provides an alternative market for this material to avoid its use in short-lived products that release the carbon back into the atmosphere relatively quickly – such as animal bedding, garden mulch or biofuel. UK manufacturers typically make OSB from small, thin flakes of Sitka spruce, Scots pine and lodgepole pine. Careful orientation of these flakes, then bonded together using a formaldehyde-based or PMDI resin, improves directional properties. OSB is important to the construction industry who use if for load bearing applications.

Currently, the UK construction industry sources OSB from Scotland, Ireland, or Europe and Kronospan imports OSB from its manufacturing plants in Latvia and Luxembourg. The five-layer OSB imported from Luxembourg employs a proprietary method to incorporate a proportion of recycled material in the core layer. Kronospan would like to manufacture this five-layer OSB at its Chirk plant. However, the construction of a new OSB line relies on installation of new power lines to the site.

First, the Chirk team must have a high voltage power line laid from the plant to the nearest source of high voltage grid capacity, which is ten miles away. This major infrastructure project will enable the plant to replace its current gas-fuelled engines and turbines with a biobased combined heat and power plant. Plans include investment in solar PVs which will enable the plant to export renewable energy to the grid. The company's plant in Luxembourg already benefits from a similar system which generates more energy from renewable raw materials than it consumes. It is, therefore, the first CO2 negative company in Luxembourg.

IMPACT

Kronospan's Chirk plant now manufactures construction products made with 90% recycled content. Recent investment enables the plant to clean and separate even more post-consumer waste. Diverting wood-based material from being buried in or incinerated, enables it to be reused in other products, extending its life and ensuring the stored carbon it contains isn't released into the atmosphere. These products are themselves capable of being recycled, retaining the carbon through several cycles of use and reuse.

Kronospan is manufacturing more home-made structural construction material close to the end-use construction locations in Wales. Local manufacture reduces the need to import new materials and the environmental impact of transportation.

The company's major infrastructure investment will improve access to locally manufactured construction products. This will further reduce carbon emissions and waste production, while increasing and extending carbon capture.

Plans to collaborate with local housing associations will help localise the source of waste wood products for recycling by the manufacturer. A fully circular economy will enable the construction and retrofit of local homes from recycled timber products made from locally sourced timber waste. It will also minimise the demands on newly harvested timber. Continued investment in manufacturing construction products to maximise their recycled content is a necessary driver if Wales is to decarbonise the construction and refurbishment of its existing and new buildings.

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This case study was authored as part of the Home-grown Homes project and was funded by Welsh Government

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