Cross-laminated timber production in Austria.

Since the development of cross-laminated timber (CLT) as a structural building product in the early 1990s, Austria has played a leading role in its production and now supplies solid timber panels to all parts of the continent including, increasingly, the UK. Its forests provide the raw material – fast-growing spruce – in abundance, and cooperation between producers, engineers and academics, notably at the University of Graz, has created a concentration of technical expertise.

The largest production facility belongs to the Finish company Stora Enso. It straddles the main road through Ybbs, a small town on the Danube, a couple of hours’ drive west of Vienna. On one side is a sawmill, surrounded by a vast sea of logs, and on the other is the CLT factory, where sawn timber is formed into solid panels replete with holes for windows and services.

The sawmill turns out a variety of timber products, from cladding panels to glulam posts; currently, just a tenth of its output ends up as CLT. Last year it processed one million cubic metres of sawn timber; currently, half a million cubic metres of sawn material. Waste is incinerated to power the drying kilns and the town’s district heating system.

The logs’ journey through the mill is largely automated. A combination of cameras and computers direct machines to de-bark and grade them by size, and guides them through saws that square them off before cutting them into whatever sizes are required. Proprietary software calculates what combination of sawn lengths might be got out of each log to meet the day’s orders most efficiently.

From the control centre in the middle of the multi-storey lattice of moving parts, it is an impressive scene: three- and four-metre lengths of sawn timber shoot through at a rate of 200 per minute, amid the cacophonous din of saws and clanking belts and rollers.

The last stage of the process is kiln drying, where moisture content is reduced. Moisture determines the prominence of the grain, and Stora Enso’s CLT can be specified in any of three surface qualities: ‘non-visible’, ‘industrial-visible’ and ‘visible’.

The timber destined for CLT is transported to the factory across the Danube a couple of hours’ drive through Ybbs, a small town on the Danube, a couple of hours’ drive. The yard at the Ybbs mill typically holds 15,000 cubic metres of raw – around 15 days’ supply. According to Stora Enso’s calculations, a cubic metre of CLT accounts for four seconds’ worth of Austrian forest growth.

The timber used to construct Karakusevic Carson’s eight-storey, 41-home Bridport House in east London, for example, would be replaced in little over two hours.

LEFT: Enso’s CLT factory at Ybbs was itself constructed from CLT in 2011.

The building contains two production lines, with room for a third, as well as the company’s CLT research and development activity. In the recent past this has focussed on issues such as fire and earthquake resistance. Current research themes include hybrid structures – CLT in combination with glulam or concrete – and the industry-wide standardisation of connection details.

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