

# TEACHING THE AUSTRIAN WAY

*This year for our Austria timber focus, TTJ joined a UK trip to Binderholz with lecturers from several universities to learn more about the products and processes in the Austrian timber sector. **Stephen Powney** reports*

## SUMMARY

- The WTTA Teach the Teachers tour was organised as part of the TTF's regional engagement programme
- Binderholz has 12 plants
- The group cuts over 5 million m<sup>3</sup> of logs annually
- The Jenbach factory is the single largest glulam production site in Europe
- Binderholz is now the largest CLT producer globally

**Cable logging in the mountains**, CLT buildings and the world's single largest glulam factory were just some of the highlights for UK university lecturers and TTJ on a recent Austrian timber sector tour.

The Western Timber Trade Association's (WTTA) first 'Who teaches the teachers?' educational tour in late September, which TRADA helped to co-ordinate, was part of the UK Timber Trade Federation's (TTF) new regional engagement programme.

It proved an excellent window on Austria's timber sector, architectural projects using Austrian engineered timber and an opportunity for the lecturers to communicate what they had learned to their students back home.

Lecturers participating were Aled Davies (Cardiff University), Andrew Thomson (University of Bath), Greg Workman (NPTC Group), Joshua Mudie (University of Bristol) and Martin Gillie (NMIITE), led by WTTA chairman and Binderholz UK's Wayne Probert and TRADA university engagement officer Tabitha Binding.

The tour was hosted by leading European and Austrian-based sawmilling and timber products business Binderholz, a company which has made massive strides in terms of the size and scope of its operations in recent years.

## BINDERHOLZ GROUP

We probably don't fully know or appreciate the fact that Austria is one of the leading European nations in terms of timber production and the breadth of its value-added products.

Austria ranks as the number four timber producer in the European Organisation of the Sawmill Industry stats for 2018, producing 10.2 million m<sup>3</sup> of sawn softwood, which was 5.7% up on 2017.

As our group participants arrived at Binderholz's Fügen sawmill and headquarters it was clear this was no ordinary set-up.

For a start, the site has its own visitor centre, gift shop and special tourist trail of its bio-energy facility and wood pellet production, helping people understand about green electricity, district heating, the history of wood and climate change.

And at the centre of the site overlooking the log yard is the SichtBAR corporate entertaining space with 'Garden of Scents', which is hired out by bluechip companies for functions and conferences.

The business was set up in the 1950s by Franz Binder, with the headquarters founded at Fügen in 1963.

It has come a long way since then and the headline figures are now incredible under the third generation of the Binder family, led by chief executive officer Reinhard Binder.

There are now 12 sites and over 5 million m<sup>3</sup> of logs are cut annually in the Group's seven sawmills in Austria, Germany and Finland.

This translates to 2 million m<sup>3</sup> of solid wood products produced from the 3 million m<sup>3</sup> of lumber. Binderholz also produces 60,000 tonnes of briquettes and wood pellets annually, while additionally providing heating for local communities through its bio-energy facilities.

The acquisitions of Finland's Vapo Timber in 2016 and Germany's Klenk Holz in 2017 were clearly landmarks in increasing the size of Binderholz's operations.

There are five sites in Austria at Fügen, Jenbach, St. Georgen, Hallein and Unternberg, while a further five operate in Germany at Kösching, Burgbernheim, Oberrot, Baruth and



Above: Binderholz has 12 production sites



Above: The Teach the Teachers group (from left): Martin Gillie, Andrew Thomson, Aled Davies, Greg Workman, Joshua Mudie, Wayne Probert, Fabian Heissbauer (of Binderholz) and Tabitha Binding



Above left: The Fügen log yard Above right: The Das Posthotel in Zell am Ziller has been extended with CLT

Wolfegg. In Finland, Binderholz has two mills – Lieksa and Nurmes.

**JENBACH GLULAM PLANT**

Value-added products are a big focus for Binderholz, be it glulam, cross-laminated timber (CLT) or multi-layer solid wood panels.

The tour group stopped off at Jenbach, the centre of Binderholz’s glulam operations and the single largest glulam factory in Europe, comprising three production facilities on one site and a 380,000m<sup>3</sup> annual capacity.

BSH glulam products here are predominantly straight beams, while curved beams with a minimum radius of 8m are also produced. Both use feedstock from the Fügen mill.

Each timber board for lamellas is strength graded and visually graded on all four sides.

Technology at Jenbach includes Microtec Goldeneye scanning, a Ledinek moulder, a microwave system for drying glue, Springer and HIT handling technology.

One of the latest additions is its “Smart Factory” automated storage and distribution operation in an Industry 4.0 smart manufacturing process.

An automatic high-bay warehouse has been constructed for all complete glulam packages, in which up to 850 individual packages or 2,000m<sup>3</sup> of glulam packages can be stored simultaneously. Packages are loaded and unloaded fully automatically via an in-house programmed warehouse management program, without which on-schedule error-free and damage-free handling would be impossible.

Around 65 truckloads a day are dispatched on a 24/7 basis.

**CLT ARCHITECTURAL PROJECTS**

One of the great advantages of the Teach the Teachers visit was seeing the whole supply chain, from forestry right through to end use in architectural projects.

“Seeing is believing,” said Wayne Probert of WTTA /Binderholz UK.

“By visiting the whole supply chain – from forest through milling, production and construction – at the scale Binderholz operates, the lecturers can have no doubt that timber is sustainable and can be used as a construction solution in both small and large scale projects.”

Architectural projects visited included two kindergartens in Innsbruck, a college in Kuchl and two hotels including the Das Posthotel in Zell am Ziller. All involved Binderholz products.

The 640m<sup>3</sup> glulam/CLT structure at one of the kindergartens was originally made watertight after just 12 days. Teachers says the building’s success is shown by the children not drawing on the exposed wood walls “because they like it”.

The Das Posthotel is rated as one of the world’s best small hotels and features a CLT extension.

Opposite the hotel, two other buildings are being constructed in CLT – one of which is a luxury hotel being built by Reinhard Binder as a separate business project.

The UK lecturers also saw the Binder HQ office, which uses CLT, glulam and larch three-layer panels on the exterior.

A further fantastic use of wood was at the Kuchl College of Wood Technology, where a new building was constructed in 2016 using 660m<sup>3</sup> BBS CLT and 70m<sup>3</sup> of glulam, with CLT exposed on the interior. Other areas are clad internally with solid wood three-layer panels.

Adjacent to the building are extensive workshops where students can train on a variety of sawmilling and woodworking machinery, which is sponsored by the machinery manufacturers. Machinery present includes EWD, Paul, Weinig, Vollmer, Alterndorf and Homag.

“Most of the students that come here are already involved in a family sawmilling

business,” said Fabian Heissbauer, of Binderholz’s technical sales department.

“This is the only facility like it in Austria.”

**SOLID WOOD PANELS**

One of Binderholz’s products which is common in Europe but not in the UK is the solid wood panel, the ‘little brother’ of CLT. It is produced at the St Georgen factory at Salzburg, which has recently celebrated its 30th anniversary.

Binder is reckoned to be the third largest producer of this product in Europe.

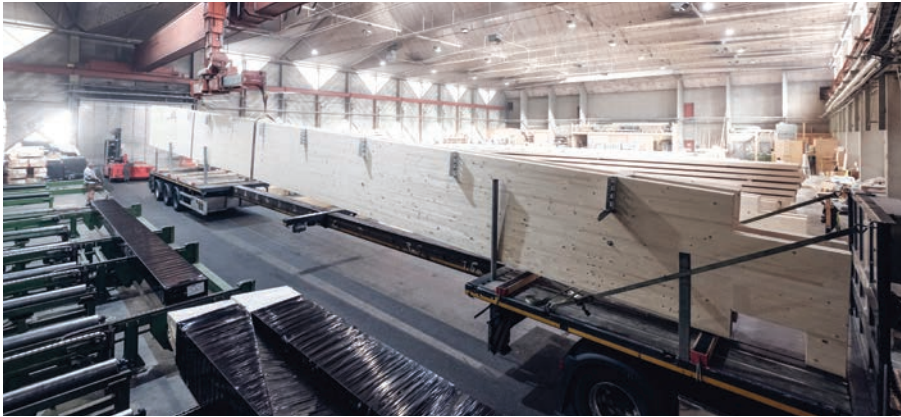
The company has been having talks about the possibility of opening a second plant and other ideas for further growth. Currently, a CLT extension is being constructed at St Georgen.

The main three-layer panel is produced in 12-60mm thicknesses and sizes of 5m x 1.25m, 5m x 2.05m and 6m x 1.25m, with E1 classification. Species include spruce, Scots pine, larch, Swiss pine, Douglas fir and white fir.

Typical uses are shopfitting, interior design, furniture, storage and racking, exterior cladding (larch and Douglas fir), with ▶



Above: Binderholz sawn timber packs



Above left: Glulam beam production at Jenbach Above right: Cable logging is used to harvest hard to access and steep forest

◀ quoted advantages being easy handling, aesthetics, stability, reduced cracking and being relatively lightweight.

“The Alpine region knows the product very well,” said Binderholz’s Monika Moosleitner. “In France we also have good sales of the product.”

Germany is the biggest market for the product but sales are small in the UK, with one small UK distributor currently selling. But Binderholz wants main UK importers to take a look at it as well.

Daily production at St Georgen extends to 10-12,000m<sup>2</sup>. Here our group saw a wide range of technology including Muhlbock kilns, Weinig Powermat 2500 moulder, Woodeye scanning, Burkle glue spreading, a Dieffenbacher multilayer press and Schelling saw.

During our visit, silver fir panels for the new hotel project mentioned earlier were being produced.

### CROSS-LAMINATED TIMBER

Our final visit in Austria was Binderholz Bausysteme GmbH’s Hallein site, where the company operates a service centre, staffed by 90 experts who work on the timber construction business – project plans, erection planning and organising all machining on panels and connection details.



Above: Binderholz’s Wayne Probert explains mill operations to the Teach the Teachers group

The location is a former MDF production site, which Binderholz closed five years ago. Binderholz has been stripping out the factory hall equipment in preparation for other group uses.

A new four-storey 1,350m<sup>3</sup> CLT office building was finished here in March and adjoins the existing offices.

The “TimberBrain”, as the new office is known, is also a model for healthy construction, with 160 data points measuring thermal conductivity, temperature, thermal radiation, humidity and VOC emissions. The Technical University of Munich is assessing the data and researchers are interviewing staff about their experiences in the building.

A total of 610m<sup>3</sup> of Binderholz BBS CLT was used in the structure, while 20m<sup>3</sup> of glulam and 100m<sup>2</sup> of three-ply solid wood panels were also used.

Actual CLT production takes place elsewhere at three plants – at Unternberg (where Binderholz began CLT production in 2007) and Burgbernheim in Germany, the latter of which has two plants.

The third plant was completed at Burgbernheim this summer to take group CLT capacity up to 320,000m<sup>3</sup>, making Binderholz the world’s largest producer of CLT.

Hundegger CNC machining centres operate in the factories to rout, drill and cut panels to project specifications.

“We are also delivering blank panels and the carpenters are doing the cutting in their own facilities,” said Binderholz’s Fabian Heissbauer.

BBS panels are made in spruce, larch and pine, with the XL, extra large, format being solely spruce.

The majority of German and Austrian projects for CLT are for floor and roof panels, whereas typically in the UK it is a steel structure and CLT floors.

BBS CLT was used in the landmark Dalston Lane apartment project in London, where B&K Structures was the build partner. The project was organised in six phases, with a

3D model created and each phase broken down into individual panel sizes, with every panel having its own number and being fully traceable.

Binderholz, and many of the participants in the WTTA Teach the Teachers group for that matter, believes there is major future potential for CLT, not just for its structural performance, fire resistance and build speed, but also healthy living as the panels are vapour permeable and therefore self-regulating in terms of moisture.

So-called BBS Thermo walls, as used in the Hallein office project, are pure solid CLT BBS construction without the need for an additional layer of thermal insulation, relying on an external larch façade for the protection of the structural envelope. ■

### FURTHER INFORMATION

Participants in the Teach the Teachers tour all reported positively on their findings in Austria.

Here are some of the comments:

Aled Davies, University of Cardiff: “The visits to timber mills and production facilities were brilliant and very informative, as was seeing cable-logging taking place on a steep mountainside. Being on site to experience timber buildings being constructed using CLT elements was very worthwhile and the speed of construction was impressive.”

Joshua Mudie, University of Bristol: “The degree to which the glulam and 3-ply board processes have been automated is very impressive, and the presence of people to visually check the timber throughout the process gives confidence in the quality of the material being produced.”

Martin Gillie, NMI TE: “I have come away with a much clearer idea about the benefits of engineered timber as a building structural material, and also some idea of the challenges it faces, particularly in the UK, before it is adopted more widely.”