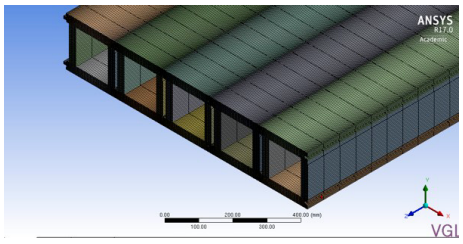
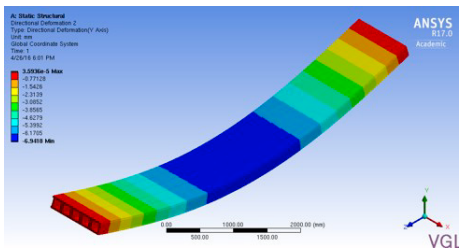
Fortissimo Success Story

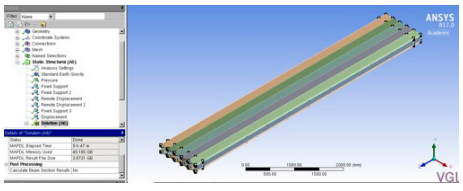
FORTISSIMO

Cloud-based simulation of box framed timber beams

Fortissimo Experiment Facts:
- Industry Sector: **Construction**
- Country: **Spain**
- Software Used: **ANSYS Mechanical**







THE COMPANIES

Maderas Besteiro is a Spanish SME that specializes in timber solutions for structural applications, such as house-building. It has recently taken an interest in offering a new product line of box framed timber beams made from Eucalyptus globulus. USC-PEMADE is the Structural Timber Engineering Department of the University of Santiago de Compostela.

THE CHALLENGE

Eucalyptus is ideal for structural purposes because of its high quality and resistance. Using this wood can allow construction companies to build homes faster, with less waste and less energy, in line with European Union housing guidelines.

Designing and testing a new structural product is an extremely costly process. As an SME, Maderas Besteiro faces a challenge to develop new products due to its small number of staff and lack of sufficient financial resources. A cost-effective computer simulation process would help to solve this problem.

THE SOLUTION

A virtual engineering workflow was designed and validated. The workflow combines the design, calculation and virtual validation stages of the process, through access to a Cloudbased HPC platform provided by Fortissimo. Using this solution has allowed Madera Besteiro to reduce their development costs and design times. A pay-per-use HPC model significantly reduces the computational costs compared to using in-house resources, and results in a better, more refined end product. The company can now optimise Eucalyptus-based solutions at minimum 19% faster than before the experiment. This will allow them to offer a better product at a lower cost than their competitors.

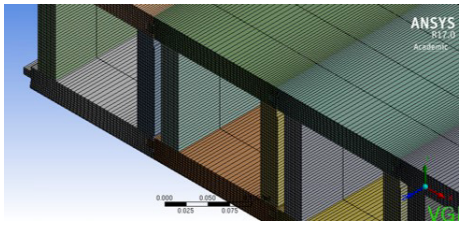
BUSINESS IMPACT

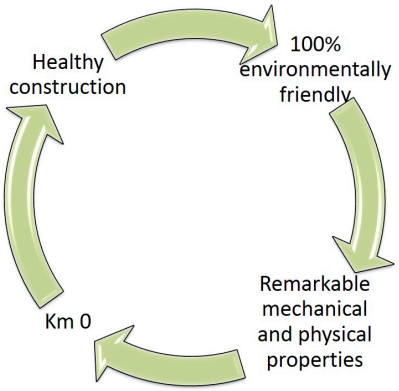
Thanks to the virtual design process offered by the Fortissimo Marketplace, Maderas Besteiro has significantly reduced their cost per m², when comparing the new box framed timber beam with the traditional framing system. Using eucalyptus instead of other hardwoods, their turnover is increased €40k per year. More importantly, Maderas Besteiro is now able to easily optimize new designs, meaning that it has a competitive advantage in its industry.

From now on, PEMADE will be able to simulate more complex models than before, including complete engineering structures. Moreover, the ability to simulate hardwood species such as eucalyptus will make it the leading academic group in Spain in this field.

Fortissimo Experiment Partners:
- Maderas Besteiro (End User)
- USC-PEMADE (Domain Expert)
- Gompute (HPC Provider)

More Information:
www.fortissimo-project-eu
info@fortissimo-project.eu





End users of this workflow can reduce their computing costs by up to 81%. From a business perspective, it has an enormous potential as the timber industry has over 400,000 active companies. Gompute is now ready to offer a complete solution in the Fortissimo Marketplace for customers who need to simulate timber structures in a fast, easy and affordable way.

BENEFITS

- Maderas Besteiro can improve its overall productivity by 23%, thanks to optimisation of just one of its products.
- Increase in turnover of €40,000 per year and ability to easily optimise new designs.
- PEMADE have gained the ability to simulate whole complex structures, as opposed to their previous capabilities.

THE FORTISSIMO PROJECT

Fortissimo is a collaborative project that enables European SMEs to be more competitive globally through the use of simulation services running on a High Performance Computing cloud infrastructure. The project is coordinated by the University of Edinburgh and involves more than 100 partners including Manufacturing Companies, Application Developers, Domain Experts, IT Solution Providers and HPC Cloud Service Providers from 14 countries. These partners are engaged in over 90 experiments (case studies) where business relevant simulations of industrial processes are implemented and evaluated. The project is funded by the European Commission within the 7th Framework Programme and Horizon 2020 and is part of the I4MS Initiative.

I4MS Fortissimo is part of I4MS ICT Innovation for Manufacturing SMEs: www.i4ms.eu

This project has received funding from the European Union Seventh Framework Programme under grant agreement No 609029 and from the European European Union's Horizon 2020 research and innovation programme under grant agreement No 680481.