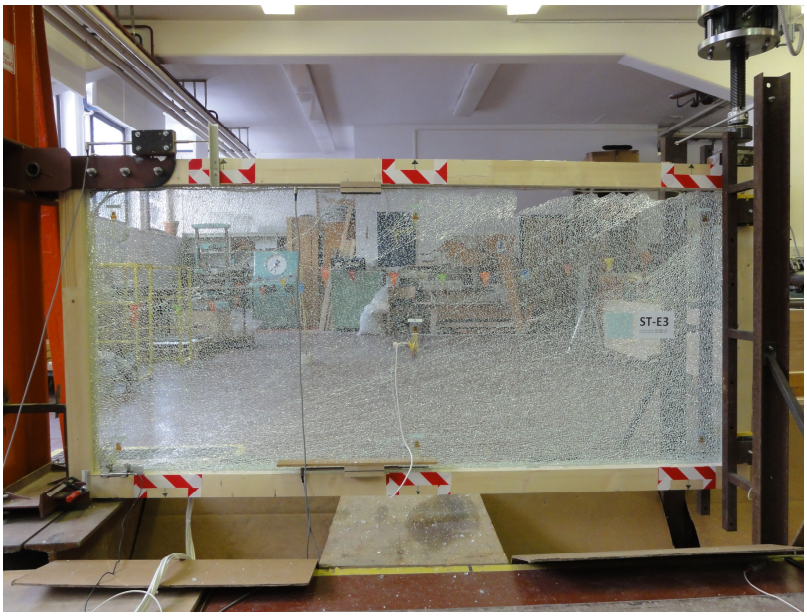
	Project datasheet COST Action TU0905
Research project :	Glazing Influence on the Horizontal Load-Carrying Capacity and Stiffness of Timber-Framed Walls
Images :	
Keywords :	timber structures, timber-framed walls, glass, adhesive bonded joint
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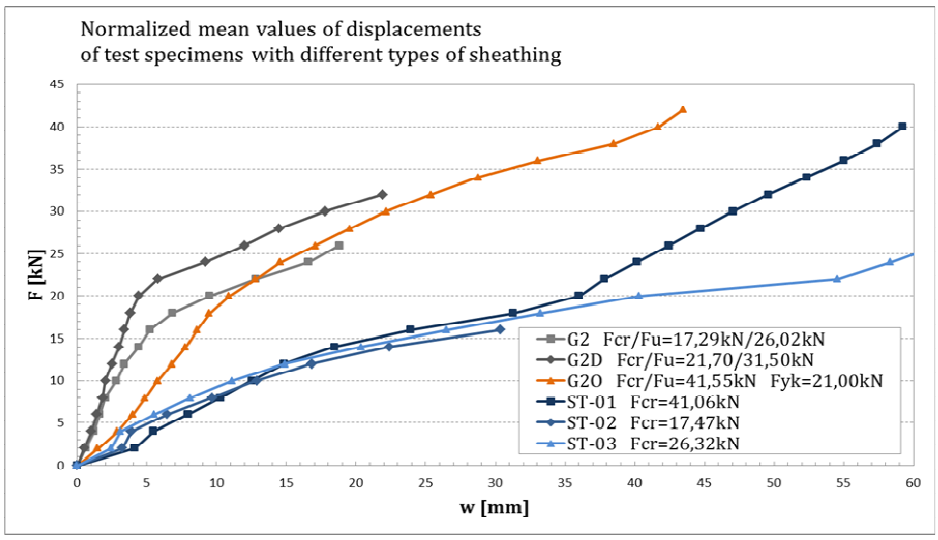
Time span :	2010 - 2014
Description :	Glass is an eternally modern material. Owing to its improved physical properties achieved through low-energy coatings, multiple glazing, filling the cavities between the glass panes with a noble gas, it has become an ever more widely used material of the last decade. Glass is no longer solely responsible for daylighting and creating the impression of an open space or that of visual integration with the immediate surroundings. Optical characteristics of glass in combination with a suitable orientation and an adequate glazing size provide a possibility of benefiting from solar heat gains which contribute rather significantly to the energy efficiency of a building. Thoughtful planning and appropriate use with respect to its properties could qualify glass as a modern-era material, equivalent to some classic construction materials. In addition, integrating large and mostly south-oriented glazing areas into timber structures represents considerable potential for the construction of environmentally-friendly and energy-efficient buildings. The importance of building large-size glazing into timber structures has significantly grown over the last decade due to the enhanced physical characteristics of glass and owing to the fact that proper integration of both materials, timber and glass, has a positive impact on indoor climate and on the energy efficiency of buildings, which was one of the major reasons for carrying out the presented experimental research. The past twenty years have witnessed a number of research projects in the area of testing linear glass structures, two-dimensional glass structures and linearly adhesive bonded joints between glass and the structure. Linear glass structures are beams and pillars made of different types of glass while two-dimensional glass structures comprise glass plates with the in-plane and out-of-plane loads. Our research work is centred on

	glass plates in combination with timber frame structure with the in-plane load. This datasheet presents some results of the experimental research into the glazing influence on the horizontal load-bearing capacity and stiffness of timber-framed walls (EN 594) whose classic sheathing materials (FPB, OSB) were replaced with those made of glass. The results include a comparison of the load-bearing capacity and stiffness of the test specimens (ST) on the one hand and the elements with classic sheathing (FPB – G2, G2D and OSB – G2O) on the other (Fig. 1). The timber frame combined with glass panes used as a single or two-sided load-bearing sheathing glued to the outer side of the timber frame functions as the composite wall element, whose load-bearing capacity adds to the stability of the entire structural system. Hence we get a load-bearing and at the same time a visually interesting element suitable for lightweight timber construction. Float glass is load-bearing also in its plane and can definitely contribute, when combined with the timber frame, to the horizontal load-bearing capacity of the construction.  *Figure 1: F-w diagrams of test specimens with different types of sheathing*
Most important publications :	- BER, B. *Glazing Influence on the Horizontal Load Capacity and Stiffness of Timber-Framed Walls* Proceedings of Training School on Structural Glass 2012, Ghent.
Working group :	WG 4. Novel glass assemblies
Task Group :	TG13. Hybrid components
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