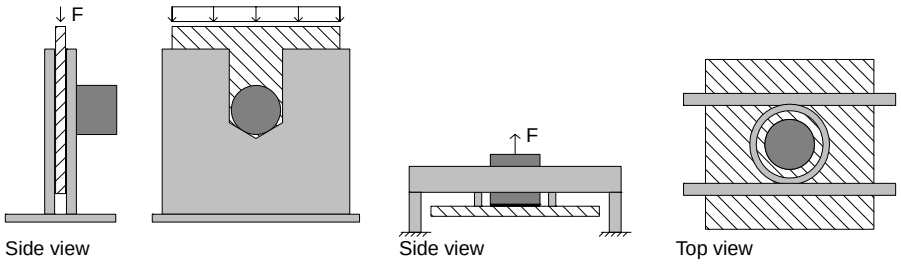
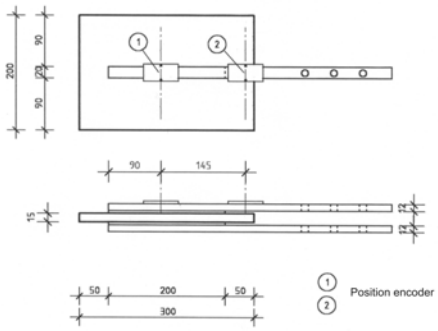
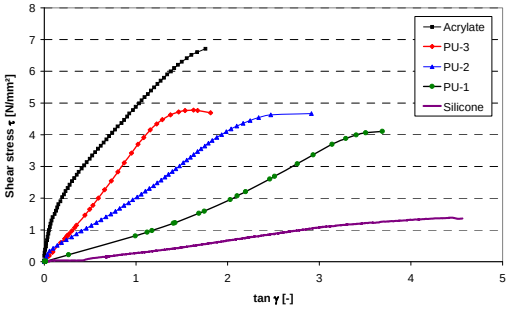
	Project sheet
Research project :	**Glued Joints in Glass Structures**
Images :	  
Keywords :	Joints, Gluing, Adhesives, Glass
Researchers involved :	- WELLERSHOFF, Frank; SEDLACEK, Gerhard; FLECKENSTEIN, Markus
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Time span :	1999 - 2003
Description :	In facade engineering the potential of glued joints of glass members is not exploited except in structural sealant glazing systems. In other technical fields the application of glued joints is already state of the art, even in safety relevant parts. A further development of glued glass joints in facades can therefore be expected in the near future. To state the potential, but also the risks in using glued joints the chemical and physical background is described. This includes the chemical principles of bonding forces and the physical principles of the deformation behaviour of polymer materials. To allow the development of new glued joints the behaviour of high modulus adhesives under variable loads and different environmental conditions has to be tested. Test results of point supports with epoxy or acrylic adhesives, tested in compliance with the aging and loading conditions of the European Technical Approval for Structural Sealant Glazing Systems, are shown. Furthermore results of linear overlapping supports with Polyurethanes and Acrylics under short-term loads and long-term loads are presented. In compliance with the Eurocode, the ultimate limit state as well as the serviceability of glued joints must be verified. For the development of appropriate design concepts, which can be implemented in corresponding standards, suitable computation methods need to be verified. The calculation of the hyper elastic deformation behaviour of polyurethanes with FE-Methods using energetic models is explained and shown exemplarily. The calculation of deformations under long-term loads with logarithmic functions, which have been calibrated by tests, are explained and verified with respect to their accuracy.
Most important publications :	- Wellershoff, F.; Sedlacek, G.: Glued joints in glass structures; Proceedings of Glass in Buildings 2; 7-8.05.2005, Bath, UK, page 159-168

	- Wellershoff, F. Sedlacek, G.: Glued joints in glass structures, EU COST C13 Final Report 2007, Glass & Interactive Building Envelopes, pages 229-239
Working group :	WG 4. Novel glass assemblies
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