

Investigations on the glass-pillar contact interaction in vacuum insulated glazing



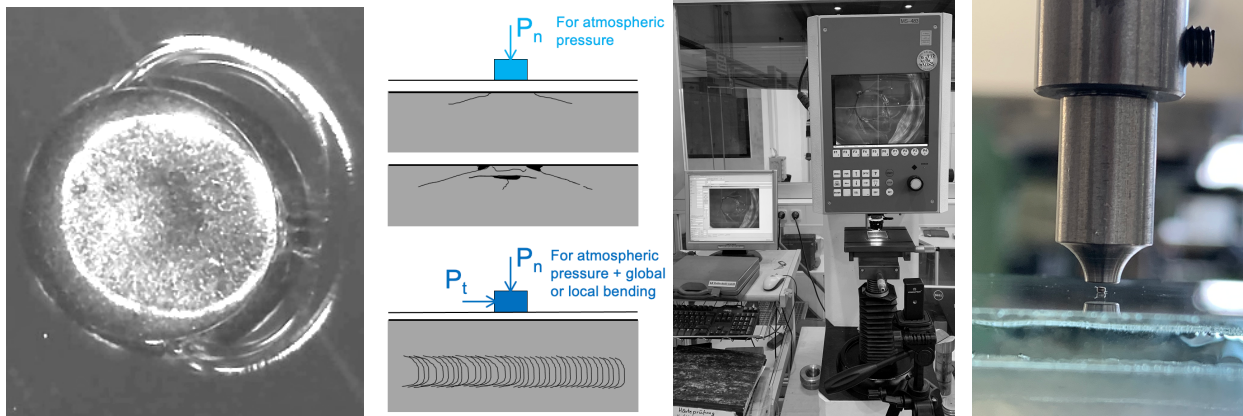
TECHNISCHE
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ISM+D

Institute of Structural Mechanics and Design
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Bachelor-/Masterthesis in the field of glass strength

Vacuum insulated glazing is a highly energy efficient glazing system. Yet, its setup (more precisely the array of support pillars necessary to withstand the high loads of atmospheric pressure (10 tonnes/m²)) evokes complex stress distributions and high stress gradients locally. This can result in the formation of so-called cone cracks which can develop into through-thickness cracks and can thus lead to catastrophic failure of these glazing units. In the design of VIGs it is typically assumed that the glass-pillar contact is not of concern if the separation of pillars is limited. Yet, investigations of various VIGs show that cracks occur anyway and failure can originate at a pillar.



A literature review shall be performed to present the state of the art (including scientific literature, Standards and Codes).

Further topics that can be the focus of the thesis:

- Development of experimental test setups (on the basis of existing machines at the ismd and the mpa Darmstadt) to investigate the crack propagation in the vicinity of the glass-pillar contact zone.
- Identification of parameters impacting the ultimate strength of vacuum insulated glazing
- Development of numerical models to approach the glass-pillar interaction in vacuum insulated glazing