

WORKSHOP

THERMAL STRESS ANALYSIS OF IGU WINDOWS AND FAÇADE GLAZING

SUMMARY

Thermal stress analyses are a special task in glass design, as the effects of direct solar radiation are often neglected in the current glass design. Within a research project, the Technical University of Darmstadt, together with project partners (Interpane, Sunovation and Fraunhofer ISE), has developed methods for determining the thermally induced stresses of IGU glazing.

Part One: The relevance of the topic will be presented from a practical point of view using current cases of damage. The basic theory of heat transport in insulating glazing and mechanical calculation will be presented. The current normative situation will be considered.

Part Two: Deals with the commonly used French standard (NF DTU 39 P3) and shows starting points for the development of new calculation methods. The procedures developed within the above-mentioned research project will then be presented and differences to the French standard, will be shown. In addition, the procedure for determining relevant meteorological data sets (solar radiation and outdoor air temperature) will be presented. Part 3 deals with application of different calculation methods (1D, 2D, 3D, steady state, transient state) on real glazing. The influence of frame and edge spacer are investigated. In Part 4 an outlook on future research is given.

COURSE TIMETABLE 14TH OF JUNE 2023

9:00 : Start

13:00 : End

DURATION : 4 Hours

ABOUT THE PRESENTER



GREGOR SCHWIND, TECHNICAL UNIVERSITY OF DARMSTADT, INSTITUTE OF STRUCTURAL MECHANICS AND DESIGN, GLASS COMPETENCE CENTER

Gregor Schwind born in 1990 is a research assistant at the Institute of Structural Mechanics and Design (ISM+D) and Glass Competence Center (GCC) of Prof. Dr.-Ing. Jens Schneider at TU Darmstadt Germany (TUDa) for now over four years. Before joining the ISM+D, he studied civil engineering at the TU Darmstadt and subsequently spent two years calculating prestressed concrete bridges for motorways.

His interests lie in structural and thermal calculations and in experimental investigations in high temperature strength of glass. Franz Paschke, was born in Frankfurt am Main in 1991, and studied civil engineering at the TU Darmstadt Germany (TUDa), with a focus on structural engineering. Since March 2020, he works in the Institute of Structural Mechanics and Design (ISM+D) and Glass Competence Center (GCC) at the TUDa under the supervision of Prof. Dr.-Ing. Jens Schneider.

His main topic is the mechanical behavior of Vacuum Insulated Glass (VIG) under thermal load. Michael Elstner is a technical engineer for glass constructions and master glazier and an officially appointed and sworn expert for the glazing trade/glass in buildings. He has been working in the glass business since finishing his education as a glazier in 1994. In his current position he is responsible for the “Technical Advisory Service” at AGC Glass Europe.

He is also member of different national and international associations and standard committees, such as Member of the Board of the Federal Flat Glass Association (Bundesverband Flachglas e. V.) as well as the Flat Glass Quality Association (Gütegemeinschaft Flachglas e. V.) and the ift Rosenheim. He is also a member of national and international standardization committees and working groups which are dealing with the application of glass.