Glass Design: A comparison of standards

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Summary

For decades glass has been effectively and safely designed in the United States and other countries using the principles of ASTM E1300. The standard has evolved from straight line charts to computer aided calculation practices as the use of glass in buildings has become more complex. Glass design has always been influenced by regions and dominated by a limited number of experts. Recently other calculation methodologies (Australian and European Norms) have been proposed for standardization or are being tapped for use outside of the native region. This leads to questions related to the rationale of the methodologies as well as applicability limits. This workshop will add transparency to the design process when using ASTM E1300 and will explain the differences between this standard and the EU and Australian methods. Monolithic, Laminated and Insulating Glass will be discussed.

Bullet Point Summary

- Evolution of ASTM E1300 glass strength calculation standard
- Use of ASTM E1300 in glass design
- Laminated glass calculations and data applications
- Calculation of Insulting Glass Units (IGU)
- Active examples of using ASTM E1300 in design
- Brief comparison of EN and Australian calculation methodologies
- Industry needs and pathway

Morse, Stephen Dr. – President of Standards Design Group and Assistant Professor at Texas Tech University. He has extensive experience in model scale and full scale testing, numerical modeling and software development. His research interests include window glass strength, wind loads on structures and finite element analysis. Dr. Morse is currently researching the strength reduction caused by ceramic frit on glass, modeling of laminated glass interlayers, strength of weathered window glass and structural use of glass. For the past ten years Dr. Morse has served as a technical adviser on the ASTM subcommittee responsible for maintaining and updating the national window glass standard, ASTM E1300. He contributed and authored key provisions to the E1300 standard including the addition of a generalized analytical procedure, expanded NFL charts and updated examples. Dr. Morse recently became the Convenor of Work Group 2 of ISO TC 160/SC 2 Strength of Glass in Buildings and a member of the US Technical Advisory Group.

Jokhu-Sowell, Urmilla - Technical Director for the Glass Association of North America. Ms. Jokhu-Sowell has more than fifteen years of experience in the fenestration industry with duties that include managing all technical activities within GANA's seven divisions and committees. Ms. Sowell earned both her Bachelor and Master of Science degrees in Civil Engineering from Texas Tech University and is a licensed Professional Engineer.

Schimmelpenningh, Julia is a Global Applications Manager, Advanced Interlayers – Eastman Chemical Company. Ms. Schimmelpenningh has 29 years' experience in lamination and laminated glass applications and has provides technical product support to glass fabricators, Architects, Designers, Engineers and Specifiers in the proper use of laminated glass.

Siebert, Geralt Dr. – Professor for Structural Design and Building Physics at Universität der Bundeswehr Munich. Geralt Siebert is now working on structural use of glass since two decades. He is registered independent consulting engineer, after receiving full professorship his international active consulting engineer's office is conducted by his wife Barbara.

Since 2003 he is Professor for structural design and building physics at Universität der Bundeswehr München (Germany). Besides giving lectures Geralt is leading a research group working on R&D projects related to the structural use of glass used in civil engineering and solar industry. In the accredited laboratory for structural engineering not only testing for research and development but also of glass elements for applications worldwide is carried out. Geralt is author of several publications. Beside others he is chairman of national German standardization committee AA 005-09-25 (Glass in Building – design and construction rules DIN 18008), member of several national and international committees like CEN TC 129 WG8 and CEN TC 250 SC11 (Eurocode for glass).

Lingnell, A. William: Consultant – Structural Glazing. Mr. Lingnell is involved in engineering, design, and construction of projects throughout the United States, Canada and other countries. He consults for general contractors, manufacturers, fabricators, owners, developers, architects, and individuals relating to glass systems used on architectural projects. He consults to engineers, testing agencies, industry trade associations, insurance companies, building managers, window producers, curtain wall consultants, and the legal profession on matters concerning glass technology.

Workshop Timetable:

09.00 Introduction of the speakers and the participants

09.15 Brief History of ASTM E1300

09.45 Basics of glass design with ASTM E1300

10:15 Designing Laminated Glass

10.45 Designing IGUs

11:15 Examples of E1300 Design

11.45 Comparison of ASTM, Australian and European standards

12:45 Discussion of Next Steps

13.00 End