



Delft University of Technology

Activity of High Performance Steel Structures Research Council (HPSSRC)

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Activity of High Performance Steel Structures Research Council (HPSSRC)



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High Performance Steel Structures Research Council (HPSSRC) is an international group of experts who are involved in the research and development of structures and structural components made of HPS and their joints using bolted and welded connections. The main objective of the council is to maintain regular meetings to promote discussion of relevant research questions, systematize existing knowledge and encourage new research activity using HPS. These objectives are accomplished by organizing workshops to facilitate discussions between researchers, ad-hoc meetings and by preparing e-books and short reports to disseminate research results for ease of use of HPS in practical applications.

The council has successfully organized the second workshop on 12th and 13th of November 2020. This time we have gathered virtually, from our homes, due to the COVID-19 pandemic. During two days of the workshop, 19 presentations concerning the member and joint behaviour, seismic performance, stability, fracture and fatigue behaviour, 3D printing technology, and financial competitiveness of HSS (High Strength Steel).

An important contribution to the success of the workshop has been eight keynote lectures given by Prof. Brian Uy, The University of Sydney, Prof. Richard Stroetmann Technical University Dresden, Prof. Peter Schaumann, Leibniz University Hannover, Prof. Jörg Lange, Technical University Darmstadt, Prof. Dan Dubina, University Politehnica Timisoara, Prof. Haohui Xin, Xi'an Jiaotong University, Prof. Cheol-Ho Lee, Seoul National University, and Prof. Tim Wilkinson, The University of Sydney.

Their presentations provided a variety of research innovations:

- use of HSS and stainless steel in composite steel-concrete structures,
- new insights and the design model for welded joints made of high-strength steels,
- the application of high strength steels to enhance the seismic robustness of steel frames,
- benefits of the damage criterion implementation in FE models for welded tubular truss joints,
- new physical evidence and analytical investigation of using HSS in welded RHS X-joints,
- damage criterion approach to HSS tubular truss joints

- benefits of automated welding to the fatigue behaviour in tubular joints,
- opportunities of using 3D printing technology in the construction sector.

Three contributions from the workshop are selected for this issue of *Steel Construction – Design and Research* and three contributions will be published in the next issues.

Our expectation is that the contributions presented and discussed in the workshop will exert positive effects on the standardization for HSS, e.g. the European standard *Eurocode 3, Design of Steel Structures, Part 1-8, Design of joints*, the Australian standard AS 4100: *Steel Structures*, and the Chinese standard JGJ/T 483: *Standard for Design of High Strength Steel Structure* and international standards ISO 14346, *Static design procedure for welded hollow-section joints – Recommendations*.

Many workshop participants are active in standardization committees, in which the latest research accomplishments are important justification in revising of existing provisions and including the new knowledge into relevant publications and revisions.

We would like to thank all participants for their valuable contributions, exciting presentations, and inspiring discussions. We gratefully acknowledge the contribution of ECCS in supporting the council initiative and in the dissemination of HPSSRC Workshop II.

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