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Karakaş, Ö., Berto, F. and Susmel, L. orcid.org/0000-0001-7753-9176 (2017) Special Issue: Fatigue Assessment of Welded Joints by Modern Concepts. *International Journal of Fatigue*, 101. Part 2. pp. 113-114. ISSN 0142-1123

<https://doi.org/10.1016/j.ijfatigue.2017.05.009>

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Material fatigue is a complicated phenomenon that causes sudden failures in engineering components. Due to the unexpected nature of these failures, fatigue is a primary concern in any engineering structure that is subject to cyclic loads. Even though the subject of fatigue has been studied extensively for a long time, it is far from being completely understood. Along with the inherent complexity of the fatigue itself, intricacy of the engineering structures make the design against fatigue an increasingly challenging task.

This task is even more difficult for fatigue of welds. Imperfections in welds are often unavoidable which result in widely varied situations that require designers' consideration. Change in material behaviour due to heating and cooling also affects the fatigue strength. Also, the shapes of weld profiles create stress concentrations with varied geometry parameters. All these factors drastically affect the fatigue behaviour of welded joints.

Considering the complexity of the subject and the wide variety of engineering applications, fatigue of welds have been studied extensively and significant progress have been made in the past few decades. Numerous methods have been proposed in order to evaluate the fatigue of welds, allowing more precise estimations of fatigue parameters of welded joints. Still developments in industry and industrial requirements continue to challenge designers for even more precise fatigue evaluations. Thus valuable scientists continue to improve the current methods of fatigue evaluation to meet the requirements of modern engineering structures.

Prof. C. M. Sonsino is one of these esteemed scientists that contributed, and continues to contribute to the field of fatigue of welded joints. Due to his lifetime of contributions to this field, the present Special Issue "Fatigue Assessment of Welded Joints by Modern Concepts" is dedicated to him.

Cetin Morris SONSINO studied mechanical engineering from 1966 to 1972 at the Technische Universität Darmstadt. He received his Dr.-Ing. degree with a thesis on the "Influence of Cold Working on Low-Cycle Fatigue" from the same university in 1982. He has given lectures in various universities in Europe since 1990 on the subjects of fatigue and structural durability. He had also worked in the Fraunhofer-Institute for Structural Durability (LBF), Darmstadt, in various departments and positions from 1973 to 2012. Since 2012 he is scientific-technical advisor of LBF. His main professional fields are random amplitude fatigue, low-cycle fatigue, high-temperature fatigue, corrosion fatigue, development and fatigue life evaluation of welded, cast, forged, sintered and fibre reinforced plastic components and structures under service loadings. He has substantial merits in fatigue design of welded structures regarding the ductility dependent evaluation of proportional and non-proportional multiaxial stress states, regarding the allowable damage sum for assessing spectrum loadings and regarding the material dependent decrease of fatigue strength after the knee-point of the SN-line in the high-cycle fatigue regime within the application of nominal and notch stress concepts with the reference radii $r_{ref} = 1.0$ and 0.05 mm. His findings about these subjects were considered in the actually most modern design code for welded structures, namely the IIW Fatigue Design Recommendations. During his successful carrier Prof. Sonsino received numerous prestigious awards:

The European Powder Metallurgy Federation (EPMF) Award in 1986.

The Joseph-von-Fraunhofer-Award in 1995.

The European Powder Metallurgy Association (EPMA) Award of Merit for Innovations in Powder Metallurgy in 1998.

The August Woehler Medal of the German Society of Materials Research and Testing (DVM) in 2001.

The Skaupy Award of the German Association for Powder Metallurgy (FPM) in 2005.

The Woehler Medal Award of the European Structural Integrity Society (ESIS) in 2008.

The Réaumur Medal of the Société Française de Métallurgie et de Matériaux (SF2M) in 2010.

The Erich-Siebel-Award of the DVM in 2010.

The International Institute of Welding (IIW) Best Paper Award in 2012.

Fellow of International Institute of Welding Award in 2015.

He has over 500 publications, 4 books, about 170 seminars and lectures at conferences, universities and companies in Europe, USA and Far East and 3 patents. He supervised 19 PhD-theses and participated to further 26 PhD-juries. He was Guest Editor of several Special Issues of the International Journal of Fatigue (IJF), Fatigue and Fracture of Engineering Materials and Structures (FFEMS) and Materialwissenschaft und Werkstofftechnik (MW).

This special issue is to honour Prof. Sonsino and his significant scientific achievements and contributions in the field of fatigue of welded joints. The special issue consists of 29 articles, covering a wide variety of topics regarding fatigue of welds submitted by remarkable scientists from all over the world, in order to celebrate the long and fruitful career of Prof. Sonsino.

We would like to thank all the authors for their valuable contributions to this special issue. Also we would like to thank the reviewers for their efforts for ensuring the high quality standards for each contribution, worthy of International Journal of Fatigue. Also we would like to thank Elsevier for making this special issue possible.