

Chairmen

- *R. Heim, C. M. Sonsino*
Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt, Germany

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The Swedish Fatigue Network

Organization



German Association for
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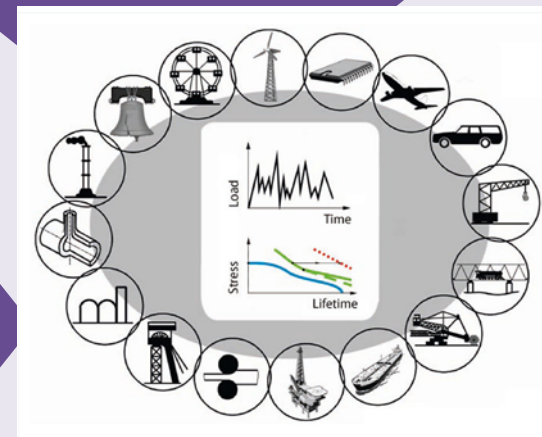


German Association for
Materials Research and Testing e.V.

VAL4

Fourth International Conference on Material and Component Performance under Variable Amplitude Loading

First Announcement



30 March to 03 April 2020
Darmstadt, Germany

Scope

The largest proportion of design and quality related costs are those associated with failures occurring in service. Typically, such failure costs accumulate through reworking, scraping, recalls or liability claims, and eventually lead to the profit loss of the manufacturer. Failure costs are the largest cost category in manufacturing businesses, and about 80 percent of mechanical failures are somehow related to fatigue as part of the strength degradation. The major contributors to such poor product quality and durability are the lack of understanding of the interactions between design, material, manufacturing and the operational conditions.

Variable amplitude (spectrum) loads, dominate the service loading conditions of many parts and components across different industries. Such loads create complex stress-time-histories to the material and components and is the critical factor causing fatigue cracks and fractures. In different technical sectors like automotive, railway, aircraft, maritime, plant, civil engineering, numerous manufacturing businesses, laboratories and research units variable load amplitude testing and analysis are performed, but few standardized methods or approaches for the durability proof exist, and the approaches and techniques used in design and testing vary considerably.

Therefore, the goal of this conference, organized by the German Association for Materials Research and Testing (DVM), is to provide a platform to the international community for exchanging ideas and information about recent developments, new scientific approaches and industrial applications regarding variable amplitude fatigue of materials, components and structures.

Started in 2002, the 2020 conference will be the fourth in a row and will continue to provide excellent opportunities for researchers and industrial representatives to discuss recent achievements and results of research studies, new approaches and state-of-the-art processes in different industries.

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VAL History

- 2002 in Tours, FR, (SF2M, ASTM),
- 2009 in Darmstadt, DE, (DVM, ASTM)
- 2015 in Prague, CZ, (Czech Techn. Univ.)

Topics

- Load assumptions and standardized load sequences
- Modeling of VA fatigue with regard to crack nucleation / initiation and propagation
- Design and analysis methods and tools
- Reliability concepts
- Materials and manufacturing technologies
- Testing and measurement methods (load control, damage detection, time reduction, active systems etc.)
- Effects on lifetime (environment, special events, spectrum shape, multiaxiality)
- Interaction of numerical assessments and experimental verification
- Industrial applications - case studies

Language

The conference language is English and will be required for abstracts, papers, posters and oral contributions.

Local Organizing Committee

R. Heim (Chairman), C.M. Sonsino (Chairman),
Fraunhofer Institute for Structural Durability and
System Reliability LBF, Darmstadt
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