April 19, 2024

Inspection Technology – Current State and Needs

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Seminar Details

April 19, 2024
1:00pm – 2:30pm

UH Campus: Engineering Building 102 D

ABSTRACT

Nondestructive testing (NDT) is one of the main technologies to prevent accidents and disasters from happening. Many people are not aware of NDT in spite of its significance for our daily lives. While X-ray and ultrasonic testing as well as computed tomography are well-known from clinical diagnostics and therapy, these and other methods used for the inspection of materials and components in engineering are mostly unknown.

In this presentation, a quick overview of the most important NDT techniques and their various fields of application will be given, followed by selected examples which illustrate the performance and capabilities of contemporary inspection technology. The examples cover the assisted manual as well as the automated ultrasonic inspection of industrial components, X-ray computed tomography of large-scale objects and the application of various NDT techniques for the cross-linked inspection of lightweight parts. The presentation concludes with a compilation of trends and needs currently discussed within the NDT community.

Proper reference will be given to the members of both academic and industrial research groups who have provided parts of the material presented, which is gratefully acknowledged.

BIOGRAPHY

Dr. Martin Spies has studied Physics and Materials Science, receiving a Doctor of Natural Science and a Diploma in Physics from the University of Saarland, Germany, as well as an MSc in Materials Engineering from the University of Houston, Texas. In 2001, Dr. Spies has been awarded the academic Venia Legendi in the field of Nondestructive Testing at University of Saarland, Saarbruecken.

He started his career in NDT in Germany's Fraunhofer Society in the late 1980s. After 20 years at the Fraunhofer Institute for Nondestructive Testing IZFP in Saarbruecken, he joined the Fraunhofer Institute for Industrial Mathematics ITWM in October 2007. In January 2015 he accepted a research and lecturing position at IZFP on physics and simulation for ultrasonic NDT. In January 2017, he occupied the position of the Chief Scientific Officer at Fraunhofer IZFP. In November 2018, Dr. Spies joined Baker Hughes' Process & Pipeline Services where he has been appointed to the position of Head of Inline Inspection Research. Since October 2023 he is a member of Baker Hughes' IET Fellows Office, covering Inspection and Sensing Technology.

His main research focus is on simulation-based ultrasonic inspection and imaging techniques with specific emphasis on defect testing and materials characterization. His scientific work, documented in more than 230 publications, has been honored with three awards in 2009 by the German Society for Non-Destructive Testing DGZfP, in 2011 by the German Copper Institute and in 2020 by the British Institute of NDT.iversity of Maryland CEE Best Doctoral Research Award and several best paper awards from international conferences.