DISCUSSING DIGITALIZATION AND HOW IT'S CHANGING NDT

The evolving role of digitalization and advanced technologies in the nondestructive testing (NDT) industry was the focus of the ASNT 2023 Annual Conference and the main topic of a discussion **INSPENET TV** had with **ASNT CEO Neal Couture, CAE**, which is now available online. In the interview, recorded during the final night of the ASNT event last fall, Couture talks about digitalization as it pertains to NDT and shares how ASNT has managed to unite the community of NDT experts, highlighting the organization's efforts and achievements in creating a space for discussing technical and business challenges in the sector. Watch the full interview at https://inspenet.com/video-tv/industry-non-destructive-testing/.

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FREE DOWNLOAD OF ULTRASONIC TESTING UT TRAINING BOOK

A revision of the practical exercise book and field guide **UT of Thin-Walled Steel Pipe Flaws** by Jimmy Ellis is now available as a free PDF book download. The book covers manual detection, characterizing, and sizing of thin-walled steel pipe flaws, with links to 57 YouTube videos. The previous edition has been downloaded over 2600 times in the past five years. The latest version is expanded to be applicable to more industry segments. The book and its accompanying videos are appropriate for beginners just starting to learn how to do manual UT but progresses to many advanced techniques the experienced UT technician could find useful. Navigation is enhanced for the experienced user, with detailed contents and subject tables.

UTOFPIPELINEDIGS.COM

NEUTRON IMAGING TECHNOLOGY CONVENTIONAL RADIOGRAPHY

A new analysis from Phoenix Neutron Imaging comparing neutron radiology to more commonly used NDT techniques is now available for free online. The **2024 Non-Destructive Testing Industry Report** first examines the current state of the NDT market and the trends driving NDT adoption before delving into head-to-head comparisons of neutron imaging with other NDT techniques, including photos. "While neutron imaging is most commonly practiced within the aerospace and defense industries," the report states, "other markets are incorporating it into their processes to improve quality, safety, and accuracy in a variety of applications." The report may be downloaded at https://go.phoenixneutronimaging.com/industry-report.

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be addressed to fully realize their potential. VR, AR, and MR technologies are advancing rapidly, with current hardware limitations–such as resolution, field of view, and battery life–being improved with each new iteration. Integrating immersive tools and digital twins with existing inspection workflows and data management systems is paving the way for faster adoptions of digital inspection capabilities. This integration directly enhances operational efficiency and boosts business return on investment (ROI). Furthermore, the cost of VR, AR, and MR technology is decreasing rapidly as the technology matures and more device options become available. Finally, cloud computing and 5G networks are making these technologies more accessible, even in remote areas, which is crucial for accelerating business adoption.

Adopting new technologies involves a learning curve and requires effective change management. As inspectors and users become more familiar with immersive technologies and digital twins, adoption will accelerate, necessitating changes at various levels within the industry. The inspection industry operates within a framework of strict regulations, and aligning new technologies with these standards is essential. Regulatory bodies are beginning to recognize the advantages of VR, AR, and MR technologies and are working toward developing guidelines and standards to facilitate their use. As the benefits of these technologies become more evident, regulatory acceptance and standardization will inevitably be addressed.

Concluding Remarks

Digital twins created from inspection data can be utilized repeatedly across multiple applications. When combined with immersive 3D visualization, they offer significant opportunities to transform the inspection industry. Continuous advancements in technology, improved business integration, cost reduction, regulatory acceptance, and innovations in AI will inevitably drive faster adoption in the inspection industry. As key barriers to entry are eliminated, digital twins combined with VR, AR, and MR are poised to become integral tools in ensuring higher safety, quality, and efficiency of inspections across various sectors.

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E1934 (REAPPROVED 2024): STANDARD GUIDE FOR EXAMINING ELECTRICAL AND MECHANICAL EQUIPMENT WITH INFRARED THERMOGRAPHY

Infrared thermography (IRT) is a nondestructive testing technique that uses infrared imaging to detect and measure thermal energy emitted from objects. This method captures temperature variations on the surface of equipment, which can indicate underlying issues. Regular thermographic inspections facilitate better maintenance planning by identifying issues before they lead to electrical and mechanical equipment failures. Methods for examining electrical equipment include detecting overheating in electrical components such as circuit breakers, transformers, and switchgear, which may indicate potential failures or malfunctions. By catching abnormal temperature patterns early, IRT helps prevent equipment failures and reduces the risk of electrical fires. In mechanical equipment testing, identifying components that are overheating due to excessive friction or misalignment with IRT helps prevent mechanical failures and extends the lifespan of equipment. By monitoring the thermal performance of mechanical equipment, IRT helps ensure that machines operate efficiently and at optimal performance levels.

The most recent version of ASTM E1934, released in the *Book of Standards*, Volume 03.03, has been reapproved by ASTM Subcommittee E07.10. This standard outlines the responsibilities of both the end user and the infrared thermographer when inspecting electrical and mechanical systems. It specifies what should be included in the documentation of qualitative and quantitative infrared examinations. The guide covers the use of equipment and materials near heated, moving, or electrically energized components. Users must establish proper safety, health, and environmental practices and identify any regulatory limitations before using the equipment.

This guide serves as a resource for end users to specify, and for infrared thermographers to perform, infrared examinations of electrical and mechanical equipment. It outlines their shared responsibilities and aims to identify and document anomalies. In electrical systems, warm anomalies usually result from increased resistance due to loose connections, short circuits, overloads, load imbalances, or faulty components, while cool anomalies indicate failed components. In mechanical systems, warm anomalies often arise from friction due to improper lubrication, misalignment, or worn components, whereas cool anomalies indicate component failure.

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IN DEVELOPMENT

The following section provides a summary of new standards, drafts, and revisions that may be of interest to the nondestructive testing and evaluation (NDT/E) community. This summary is provided in *Materials Evaluation* on a quarterly basis in January, April, July, and October. For the latest information, please visit the website of the standards provider.

PROJECT INITIATION

ANSI procedures require notification by ANSI-accredited standards developers of the initiation and scope of activities expected to result in new or revised American National Standards. The following is a list of proposed actions and new standards that have been received recently from accredited standards developers. To view information about additional standards for which a project initiation notification has been submitted, and to search approved American National Standards, please visit ansi.org, which is a database of standards information. Note that this database is not exhaustive.

- **BSR/AWS D17.4-202x,** *Specification for Additive Friction Stir Deposition for Aerospace Applications.* This is a new standard. This standard provides a process specification for the AFSD process that can be followed for purposes of creating and qualifying a deposition procedure specification (DPS) that will produce qualified components for aerospace. It borrows some of the common language and terminology from the existing AWS D17.3 and AWS D20 specification but accounts for the specific requirements for this additive manufacturing process. This standard would initially be used by the aerospace community to certify the process, but, like the AWS D17.3 specification, it is anticipated that a larger community will use it as a general AFSD process specification.
- **BSR/ADCI 01-202X,** *Commercial Diver Training – Minimum Standard.* This is a new standard establishing a core curriculum to train entry-level marine technicians and commercial divers to assist in general operations in oceanographic and commercial maritime enterprises and safely carry out technical operations underwater.
- **BSR/UL 2278-202x,** *Standard for Safety for Megawatt Charging Configured Electric Vehicle Couplers.* This is a new joint standard