Emerging Trends in Non-Destructive Testing

Description:

Uninformed End Users Hinder Extensive Adoption of Recent NDT Techniques
Low awareness regarding non-destructive testing (NDT) techniques is limiting the uptake of some of the newer techniques such as phased array ultrasonics and digital radiography. End users also seem hesitant to adopt phased array into the mainstream due to its high initial cost. An additional challenge for NDT manufacturers is meeting the high customer expectations. Customers are demanding a host of features in the new equipment, which may not be possible due to technology or economic limitations. These NDT techniques, however, continue to be within the reach of well-trained consumers who understand and appreciate the benefits.

This Technical Insights study provides an overview of emerging trends in NDT. A synopsis of the emerging techniques, analysis of recent developments in the fields of ultrasonic testing, eddy current testing, surface inspection, visual inspection, and radiographic inspection is included in this study. The study identifies commercial applications for NDT testing and provides a summary of key patents that will offer an insight into notable activities and important market participants. A report on technology drivers, restraints, and challenges in NDT is also presented to enable companies to align their positioning strategies so as to benefit from these emerging technologies.

Drawbacks of NDT Techniques Reduce Chances of Monopolizing the Market
The inbuilt disadvantage of NDT methods curbs it from monopolizing the market. NDT inspection requirements depend entirely on the material and structural configuration and lifecycle stage of the product, explains the analyst. For example, ultrasound testing is influenced by background noise, which may result in off-the-mark measurements. Nonetheless, a series of advancements related to computers and other interdisciplinary fields have made major impacts on the NDT methods thereby making them indispensable and increasing the occurrences of NDT usage.

In fact, advancements in the development of new materials are expected to reap rich results in terms of renewed demand for NDT testing. These materials are expected to have the strength and resilience of traditional materials while being lightweight and affordable. The advent in microelectronics is anticipated to bring a horde of other beneficial improvements in NDT such as reduction in cost, instrumentation weight, and size. All these factors combine to boost the future of NDT technique despite its inherent shortcomings.

Modernization Increases Acceptance of New Techniques
Efforts are being made to integrate several NDT methods; data fusion techniques are being developed to enable effective data-acquisition, processing, and interpretation of the test parameters in relation to the material integrity, notes the analyst. Phased array technology with its electronically controlled multiple probes has moved from the medical to the manufacturing industry and other technologies such as eddy current and magnetic particle inspection are being widely utilized in the aerospace sector.

Advances in sensors, development of new materials, and miniaturization of devices are all paving the way for NDT techniques. The future of NDT looks bright with possibilities of intensive adoption across several interdisciplinary fields.

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