ABSTRACTS

NDT methods are currently employed in the quality assurance during the manufacturing and for in-service inspection of aerospace components and structures. Most of these techniques are focused on the detection, sizing, and characterisation of flaws such as cracks, at pre-determined critical locations, that lead to fractures and hence failures in the component. Advanced NDE methods are being developed by the Centre for NDE at the Indian Institute of Technology Madras (CNDE@IITM) that may potentially influence the fabrication, inspection, safety, costing, and maintainability of the aerospace components and its fleets in the military as well as the commercial sector. Some of the techniques that will be discussed here includes: (a) Use of ultrasonic guided waves for the improved inspection of complex structures and components including hidden areas, (b) Structural health monitoring of components and structures using attached and embedded sensor networks, (c) Use of new and novel active thermography techniques for thermal barrier coatings on engine components, and (d) Waveguide sensors for process condition measurements. Using the methods discussed here, the operator now has the opportunity to take vital decisions such as component integrity and propose necessary repair/replacement or estimate the remaining life of the component.