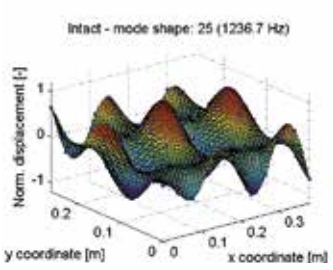
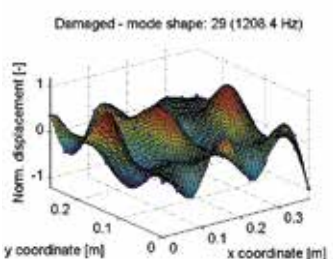
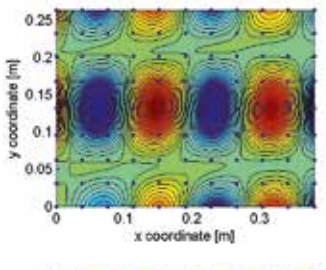
DAMAGE DETECTION IN COMPOSITE AEROSPACE STRUCTURES

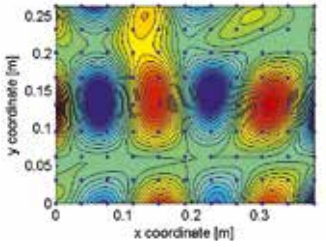




Damage detection is a major challenge in the aviation industry, in particular with regard to the use of composites materials in aircraft structures. As composites materials prove to be cost effective for structures they also exhibit damage effects that require new perspectives for detection.

Delamination effects and debonding of stringer runouts are examples that are barely visible and need NDT techniques in AOG situations for assessment of the damage. Although several approaches exists and are being developed, the damage detection algorithms currently applied in combination with integrated photonics based sensing equipment from Technobis are based on a modal (vibration) approach with the ability to detect the presence and location of the damage in a composites structure with a relatively limited number of sensor positions. Different methodologies can be applied to measure the dynamic response of structures for assessment of damages, i.e. Modal Strain Energy Analysis, Acousto-Ultrasonic sensing (Acoustic Emission, and Lamb waves). The methodologies involve sample rates ranging from 1 kHz to 1Mhz. Technobis is developing the ***SuperGator*** in the EU-project EXTREME that supports such wide range of sample rates maintaining the specification of sub micro-strain resolution for large dynamic strain ranges.





Gator

Rolf Evenblij
Program Manager Aerospace
Rolf.Evenblij@technobis.com