

Simulation of acoustic emission sources in composite plates

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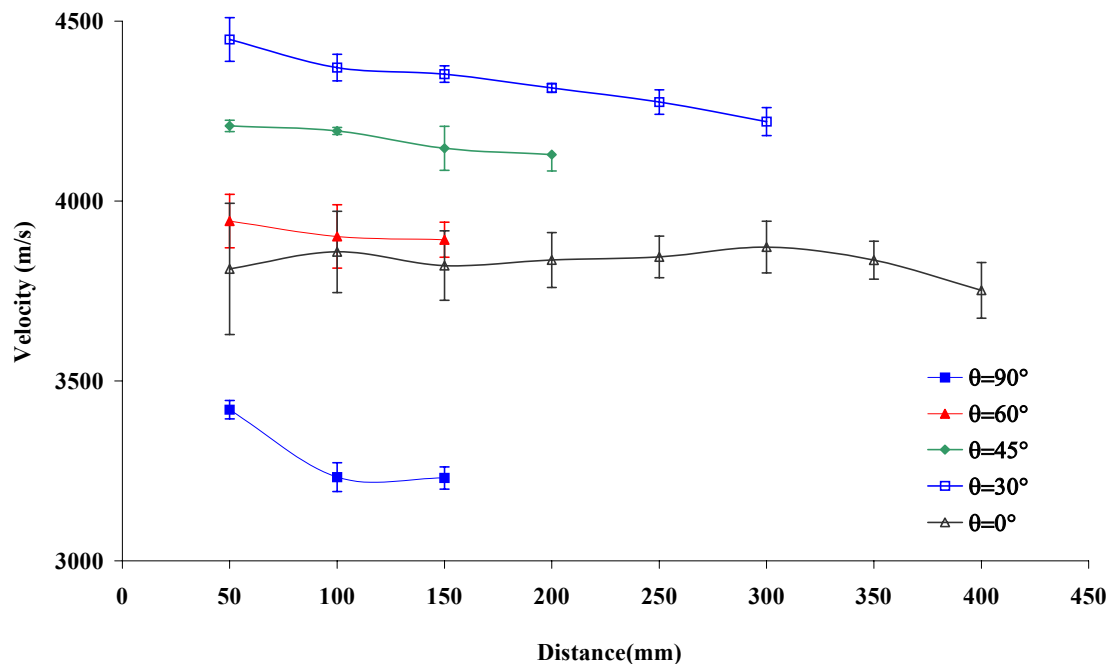
The industrial structures under operation are very often subjected to raised mechanical stress, phenomena of corrosion, tiredness which reduced their lifespan. These phenomena require the installation of procedures of maintenances as acoustic emission. This technique allows moreover:

- the examination in service avoiding of the expensive stops,
- continuous assessment and analysis in real time,
- the diagnosis of the severity of the damage,
- localization of the evolutionary defects without disturbing the structure.

The possibilities of localization which acoustic emission offers, make possible to determine the zones where the sources of AE are: this why the knowledge of the propagation velocity in the structure is necessary.

The present study relates to the wave propagation of acoustic emission in composite materials. Leads breaks (Hsu Neilsen source) were used to generate simulated acoustic emission signals (at mid-plane and in-plane).

The attenuation of waves and the variation of propagation velocities according to the orientations of fibres were studied. The different modes of propagation were, also, identified.



Variation of velocities with the sensors's distances according to orientation of those sensors (in-plane source)

Keywords: acoustic emission, propagation velocities, attenuation, source position

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