عنوان مقاله:

Online Monitoring of Glass/Polyester Composites During Mode I Delamination Test Using Acoustic Emission Method

محل انتشار:

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خلاصه مقاله:

Delamination is one of the most important damage mechanisms in composite materials. During mode I delamination various damage mechanisms may occur and subsequently degrade the long-term performance of composite materials. Hence, detection and classification of these damage mechanisms is of great importance. For this purpose, acoustic emission (AE) was used as an efficient non-destructive method for health monitoring of glass/polyester composites during mode I delamination. The dataset was clustered using integration of k-means and genetic algorithms. The clustering analysis represented three clusters, each one related to a distinct damage mode. Considering the relationship between AE parameters and damage mechanisms, the AE signals of obtained clusters were assigned to distinct damage modes. Also, the dominance of damage mechanisms was determined based on the distribution of AE signals in different clusters. Finally, SEM observation was utilized to validate the results. The results indicate good performance of the proposed method in online monitoring of composite materials.

کلمات کلیدی:

Acoustic emission; Composite materials; Health monitoring; K-means genetic algorithm