

**DYNAMIC CHARACTERIZATION OF LAMINATED KENAF
FIBER COMPOSITES WITH DELAMINATION USING
EXPERIMENTAL MODAL ANALYSIS**


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“I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree”

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ABSTRACT

The project is carried out to understand the dynamic characterization such as natural frequencies, damping ratio and mode shapes of Laminated Kenaf Fiber Composites with Delamination by using Experimental Modal Analysis (EMA). In experiments, the sample subjected to force is laminated Kenaf Fiber composites with delamination. The dimension of the laminated composites is 185 mm X 145 mm X 6mm, and the delamination area is 13412.5 mm².

Although modal methods are mathematical in nature, the results are obtained from experimental application by using dB Real Time Analyzer (dBRTA) and ME'scope software on five different boundary conditions. The results obtained are compared with other two methods, which are Random Excitation Method and Finite Element Method. Using comparative method between these methods, the differences can lead to a modification on the result of modeling using Finite Element Method. Since the Experimental Modal Analysis will give an accurate result, the Random Excitation Method and Finite Element Method should give a close result to modal testing result.

Any changes and differences in results need modifications, to ensure it can be used in design project. Therefore, a basic understanding of structural dynamic such as this homogeneous plate is necessary for engineering application by a successful experimental testing.

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