THE EFFECT OF PROGRESSIVE CRACK ON DYNAMIC PROPERTIES OF SIMPLE BEAM USING EXPERIMENTAL MODAL ANALYSIS

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"I declare that this thesis is the result of my own except the ideas and summaries which I have clarified their source. This report has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

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ABSTRACT

The development of experimental modal analysis as a non-destructive method caused by it criteria which offer effective solutions to real life engineering problems. Along with the development of modern computer technology, experimental modal analysis has been proven as an option to analyze complicated structural vibration problems. The parameter gather by modal analysis can be used as indicator of structural safety. Natural frequency which is the main parameter in modal analysis can indicate the deflection of the structure which also significant in determines the structure's crack. The project focused on the identification of dynamic properties of simple mild steel beam with and without progressives crack. Two different cases are selected to been carry out for testing which are free hanging and simply supported condition. Progressive crack was seeded on a simple mild steel beam using band saw. For a different crack depth the dynamic properties were determined using EMA (Experimental Modal Analysis). This project covers a experimental technique by using db Real Time Analyzer (dbRTA) or 01db 4-channel equipment and ME' Scope software. The result obtained which include the mode shapes and natural frequency will be analyze and compare to the numerical model using Finite Element Analysis (ANSYS 5.7) software.

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