

**COMPARISON ANALYSIS OF STANDARD TWIN TUBE FRAME TYPE
MOTORCYCLE FRAMES 125 CC STANDARD WITH MODIFIED FRAMES
USING FINITE ELEMENT ANALYSIS (FEA) METHOD**

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ABSTRACT

Motorcycles or two-wheeled vehicles are the common means of transportation used by the community. conventional bicycle made In 1868 the first company to produce motorcycles on a large scale. Since the discovery, more and more experiments have been carried out to make motors. One of the important elements in the series of making a motorbike is the motorbike frame itself. The motorbike frame is made to support loads such as the motorbike engine, motorbike hood, and also the load from the rider himself. Motorcycles are not only used for daily activities but also for racing events with various existing classes. This study aims to modify, analyze and create simulations of standard frames with factory-made frames. To make the design and frame simulation the authors use computational applications to facilitate this research. This analysis uses not only comparisons between the two frame structures but various materials such as ASTM A514, Galvanized and Carbon Fiber. This analysis uses three measurements of the strength of the frame structure, namely Strain, Displacement and safety factor as a comparison factor for the two frames. The results of this analysis show that Galvanized material is not recommended to be used as a motorbike frame material because the Galvanized yield strength limit is $2.039e+08$ N/m² and the value obtained is $6.325e+08$ N/m² while other materials are still within safe limits to be used as a framework for racing.

Keywords: Material, Frame, Motorcycle