Studi Kasus Analisa Pembebanan Statis Pada Desain Rangka Mobil Hemat Energi Jenis *Ladder Frame* Dengan Menggunakan *Software* Ansys Workbench 2019 R2 (*A Case Study Of Static Loading Analysis On The Design Of An Energy Efficient Car Frame Type Ladder Frame Using Ansys Workbench 2019 R2*)

Pembimbing (2 orang)

Arif Septa Wildan
Study Program of Automotive Engineering
Majoring of Mechanical Engineering
Program Studi Mesin Otomotif
Jurusan Teknik Mesin

ABSTRACT

A vehicle frame, also known as its chassis, is the main suppoting structure of a motor vehicle. Therefore the strength and safety of the chassis plays an important role in avoiding fatal accident. Along with the development of significant computer technology, design problems can be relatively easier to do before the final prototype is made. Thus a component can be evaluated before it is produced and applied. The experiment was conducted in state Polytechnic of Jember from October 20th Desember 10th, 2019. The purpose of this study was to determine the value of deflection, normal stress, safety factor, dan rivet joint efficiency on the design of an energy efficient car frames with the help of Solidwork for modeling frame design and Ansys to analyze frame structures.The results showed that the analysis using the software in deflection (δ), normal stress (σ) and safety factor (sf) respectively are 0,91793 mm, 6,3955 Mpa, and 2.3349. While based on theoretical calculations in deflection (δ), normal stress (σ) safety factor (sf) and rivet joint efficiency respectively are 0,9368435505 mm, 6,3830 Mpa, 2, dan 62,7%. Based on the results of the study it can be concluded that the values above are still below the recommended values, so that the chassis structure conditions are still safe.

***Keywords**: Chassis, deflection, stress, safety factor, efficiention of the rivet*