

## **Design Analysis of Mechanical Jack for Assembling Canopy**

Izzuddin Zaman, Shiau Wei Chan, Mohd Shahrir Mohd Sani International Journal of ACM

International Conference Proceeding Series

2017, 209-213

The canopy has been used widely all over the world due to the ability of the canopy to provide protection to human from the scorching sun or rain. However, the erection of the canopy is a tedious work. It needs four or manpower in order to lift a canopy frame at the same time, thus requires more spending in order to hire a worker. The canopy jack was designed to make the erection of canopy easier at the same time to reduce the usage of workers. There are several mechanical jack that available in the market, but there is no specification of design analysis. This research is conducted to design canopy jack and determine the static analysis by using SolidWorks software. The design process was done by following the design engineering process which consisted of four main phases; defined task, conceptual design, embodiment design and lastly is the detail drawing. The static analysis was carried out by using SolidWorks to determine the maximum stress and strain, displacement and the safety factor of the canopy jack. The main bolt was the critical part of the canopy jack. Based on the result of static analysis, it shows that the maximum stress analysis reading is 362 MPa and the minimum factor of safety reading of the main bolt is 1.71, thus shows the main bolt was safe to be used. Overall, it can be concluded that the canopy jack was safe and strong enough to be use in order to lift the maximum load of 200 kg.