

ABSTRAK

Dodik Yulianto. Mechanical System Design In Cutting Machines With Readers Sensor Pattern. Jakarta: Jurusan Teknik Mesin Fakultas Teknik Universitas Negeri Jakarta, 2016.

This research aims to design mechanical systems as well as components that are used to support the automation system at the cutting machines with automatic pattern sensor reader.

This study includes planning tools, tool manufacture, and testing. The design of the mechanical system of the machine is analyzing the safety factor of the mechanical system components. Analysis of safety factors on the mechanical system components include the design of the gear rack and pinion rack, stepper motor selection based on the value of torque associated with engine load imposed on the electric motor and the load factor of the total transferred.

Based on the results of the mechanical system design cutting machines have obtained the value of the safety factor components based on the value of the total load value transferred load distribution on the arms mechanical drives where each value is for driving the X-axis and the drive axis = 0.66 Y = 1, 44 based on the result of the value of the safety factor distribution of the load safely moved still within the threshold based on the load distribution table safety factor (Km) which is of 1.6. In this case it can be concluded that the result of design and calculations performed on the mechanical components can operate properly and can sustain automation system contained in cutting machines with sensor pattern reader.

Keywords: welding machines, mechanical systems, the safety factor.