

ABSTRACT

In the product development phase there is a phase of testing and refinement where this phase is done after the detail design in which there are dimensions, shape, material, product characteristics that have been produced. In testing or testing required prototype. Prototype is an assessment or approximation of the product based on the goals to be approached. In the first study entitled "Designing an Ergonomic CNC Router Workstation Using EFD Method" in the research resulted in the concept of design design that consider aspects of ergonomics to the function of the product. The resulting design was an analytical prototype using CAD software.

The design results from the first study did not test the strength and ability of the table in holding the load which is one of the phases in product development. Therefore this study will focus on testing the strength of CNC table structures already in the design. The tests were performed using an analytical prototype so that this test was a simulation using Finite Element Method (FEM). The Finite Element method allows engineers to analyze objects / products with complex geometries and different material compositions so as to solve dynamic problems. The result of this research is that the Factor of Safety from the CNC table is said to be safe and the result of the stress and displacement analysis of the table is said to be safe. From the value of Factor of Safety generated high enough design so that it can be done optimization that can affect economic factors and aesthetic factors. Design that has been optimized obtained value Factor Safety is still in a safe condition so that the optimization of the design can be considered to be produced and applied to the actual situation.

Keywords: *Faktor of Safety, Finite Element Method*