FUNCTIONALITY TEST OF THE COMPOSITE TENSILE TESTER PROTOTYPE USING THE TARNO GROCKI UPH 100 KN MACHINE COMPARISON

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ABSTRACT

Tensile testing is a method used to test the strength of a material by applying a load along its axis. Tensile testing is used to measure a material's resistance to slowly applied static forces. Nevertheless, there are various types of materials that need to undergo tensile testing, one of which comes from natural fibers. In Indonesia, natural fibers have become one of the commodities, and there is already an industry that utilizes natural fibers. However, tensile testing equipment in Indonesia is still mostly imported products with quite high prices, presenting a unique challenge to design and produce a prototype tensile testing device at a more economical price by utilizing components and equipment available in the market. The result of the design of this tensile testing machine is that it can display test results in the form of stress and strain values. The average values obtained from the tests using the designed tensile testing machine are for the fiberglass composite specimen 54.22 N/mm^2, and for the pineapple fiber 14.66 N/mm^2, with strain values of 1.03 mm/mm for both the fiberglass composite and the pineapple fiber specimens. Meanwhile, the results from the prototype machine show that the fiberglass composite specimen has a strain of 1.02 mm/mm, and the pineapple fiber specimen also has a strain of 1.02 mm/mm.

Key words :*Tensile test, ultimate tensile strength, composite*