Variation of Volume Fraction of Reinforced Biocomposite Combination of Woven Coconut Fiber and Woven Hemp Fiber in Tensile Test and Impact Test
Mentor (Dicky Adi Tyagita, S.T., M.T.)

by
Rizal Septian Dwi Kusuma Putra
Study Program of Automotive Engineering, Department of Engineering
Politeknik Negeri Jember

ABSTRACT

Composite materials are a combination of matrix or binder materials and reinforcements. One type of composite material that is widely produced is composite material filled with natural fibers and can also be produced from synthetic fibers. This research aims to determine the strength resistance of impact tests and tensile tests on composite materials combined with coconut fiber and hemp fiber compared with carbon fiber composites using woven fiber arrangements, as well as the application of this composite combination of natural fibers to vehicle bodies. The method used is vacuum bagging using a composite blend of coconut fiber and hemp fiber with carbon fiber composite, with volume fractions of ±30%, ±40% and ±50% respectively for the tensile strength and impact resistance values. The research results show that carbon fiber composites have higher tensile strength and impact resistance values of 40% and 30% compared to composites combining coconut fiber and hemp fiber. As the volume fraction of carbon fiber composite increases, the tensile strength and impact resistance increase. However, in composites, the combination of coconut fiber and hemp fiber, as the volume fraction increases, actually reduces the tensile strength and impact resistance. This is because there are still voids (air bubbles) and the natural fiber weave is not tight and there are still holes, thereby reducing tensile strength and impact resistance. The L CVT cover cap composite, a combination of coconut fiber and hemp fiber, is not suitable for application to vehicle bodies because in terms of appearance it is still not good. There are still things that need to be repaired, because there are voids (air bubbles), holes and gaps in the composite woven material combined with coconut fiber and hemp fiber.

Keywords**:** *Resin, Catalyst, Vacuum Bagging, Carbon Fiber, Composite*