

ABSTRACT

The paper presents a study on the effect of lay up process to the mechanical properties of composite material made from fiberglass and epoxy resin. A hand lay up method leads to uncontrolled speed and pressure producing large number of voids in the composite and poor mechanical properties. On the other hand, dry lay up process, using prepreg, produces smaller number of voids and better mechanical properties. However, this method has a high cost production. Therefore, we have built a simple controllable lay up instrument which has lay up speed from 2 cm/s up to 4.2 cm/s. The composite produced with this technique has small number of void and performs a better mechanical properties. When the lay up speed is set at 2 cm/s, the produced composite has a tensile strength about 55.7 MPa higher than the one produced by dry lay up and 106.04 MPa higher than the one made by hand lay up. The modulus Young has increase about 1.8 MPa to dry lay up and 5.44 MPa to hand lay up. A slower roller speed produces a higher tensile strength composite.

Keyword : dry layup, hand layup, roller speed and pressure, void, tensile strength, modulus young