

ABSTRACT

This study aims to find the value of each parameter will reach the optimum point between Bed Temperature, Print Temperature, and Print Speed in Additive Manufacture process to the strength and precision value. The sample in this study is a simple specimen in the form of boxes made from polymer High Impact Polystyrene is selected because it has more advantages than other materials used in the Additive Manufacture process. At this time, the increasingly intense competition in the industrial world makes the producers to pay more attention to the quality of the final products made with Additive Manufacture process especially on the quality strength and precision dimensions of product dimensions. Based on the problems that occur required further study to obtain optimization by using the method of taguchi that utilizes a combination of factors and different levels. This experiment was conducted 25 times the manufacture of the product with the parameters of Print Speed with the level used is 30mm /s, 50 mm/s, 70 mm/s, and 90 mm/s, Bed Temperature parameters with level 115 °C, 117 °C, and 119 °C, and Print Temperature parameters with levels of 220 °C, 230 °C, 240 °C, and 250 °C which will then be tested for strength and precision testing of product dimensions. Optimal factors and levels will be selected and used to support set up parameters in the product manufacturing process in order to get the best product results with power and precision. From ANOVA test result and SN Ratio result, it is concluded that parameter optimization in precision test is Print Speed parameter 30 mm / s, Bed Temperature 117°C, Print Speed 220°C. While the parameter optimization on strength test of ANOVA and SN Ratio test result was found that the parameters of Print Speed 30 mm / s, Bed Temperature 119 °C, Print Speed 250 °C.

Keywords : Additive Manufacturing, High Impact Polystyrene, optimization, precision, strength