

## ***ABSTRACT***

*This study aims to identify the causes of defects, analyze the variables that influence defects, and evaluate how the application of Statistical Quality Control methods can help reduce the defect rate in frame production in the vehicle body fabrication industry. The study was conducted using internal data over a 24-week period analyzed using control charts to monitor the stability of the process under study, correlation analysis to understand the correlation between independent variables, and regression analysis to determine the influence and significance of the independent variables, namely cutting wheel wear, machine speed, and cutting wheel thickness. The results of the regression simulation show that the defect rate in the frame cutting process can be reduced by controlling these independent variables at the improvement point. Although the simulation results show a potential reduction in the defect rate by 42.7% against the basic performance of the production system, the simulation results with the regression equation still do not reach the target defect rate tolerance of 5%, so further research is needed to strengthen the stability and capability of the process.*

*Keywords : Defect rate, DMAIC, Statistical Process Control, Regression Analysis,, Process variability.*