

## **ABSTRACT**

*PT. XYZ is a company that produces railway. PT. XYZ' railway has two main components, namely bogie and carbody. One of project which's being worked by PT. XYZ is MG 200 project from Bangladesh that runs from December 2018. Carbody is composed of various components. Based on PT. XYZ' historical data, there's one component that composes the carbody, namely underframe that has delayed production. The company's production target from December 2018 to February 2019 is 41 units, but the realization of production is only 25 units. This happens because of porosity defect found in underframe, that caused by welding process. This study uses six sigma method with DMAI (Define, Measure, Analyze, Improve) approach. Define phase discuss about CTQ (Critical to Quality) using Delphi method, and SIPOC diagram to know the production process flow. In measure phase, discuss about process stability (c-control chart) and process capability using Minitab software.. Analyze phase discuss about root cause analysis using fishbone diagram, so it's known that porosity defect are consist of 1 cause from material, 2 causes from man, 1 cause from machine, 1 cause from method, and 1 cause from environment. Next, analyze phase also discuss FMEA to give improvement priority. To reduce even eliminate porosity defect, improve phase gives the improvement designs which are material storage characteristics, welding process workstation characteristics, and procedure display at welding process of underframe carbody MG 200.*

*Key words: Underframe, Six Sigma, DMAI, Porosity, Welding Process*