ABSTRACT

PT. XYZ is a company constrution of offshore (offshore) facility that supports oil and gas industry activities. Based on the project schedule data, one of the most critical processes or work (critical task) in the implementation of a construction project is the welding process. According to data defect of welding from January March 2017, found the number of defects as much as 601 welding points.

This research aims to reduce the number of defective in the welding process that occurs in the implementation of projects in PT. XYZ, for further research to be used in identifying and analyzing causes of defective in the welding process.

This research using six sigma approach consisting of stage DMAIC (Define, Measure, Analyze, Improve, Control). In the define stage is the stage of identification with the determination of the type of defective that affects the quality of the welding process (critical to quality), namely the slag inclusion, lack of fusion and porosity. Then go on the stage of the level of damage and sigma level that is at the level of three sigma with DPMO value of 43,958.93, other than that found also the existence of three points of welding that is out of control (out of control), then indicated that PT. XYZ can not be controlled.

Analysis stage in implementation six sigma was used by fishbone diagram and FMEA analysis. Based on the results of fishbone diagram, factors affecting the defect of the welding process come from human factors, machine, methods, materials and environment. Through FMEA analysis result of factors affecting welding process defect in PT. XYZ, the most critical factor as the cause of the slag inclusion and the lack of fusion is the method factor.

Based on the results of research, then to reduce the level of defective in the welding process at PT. XYZ, through the findings on the most potential or main cause factors as the cause factor is the method factor, then the company should prioritize the improvement and prevention of method and material factors.

Keyword: *defect, DMAIC, six sigma, welding*