SUMMARY

Meilisa Dwi Cahyani, Department of Industrial Engineering, Faculty of Engineering, Brawijaya University, January 2017, *Quality Control Defects Bladder With Six Sigma and Poka Yoke Methods*, Supervisor: Nasir Widha Setyanto and Rakhmat Himawan

PT. Inkor Bola Pacific is a manufacturing company that produces various types of balls in between volleyball, basketball, football and futsal ball. The stages in the manufacturing process of the product are mixing, bladder, carcass, laminate, and finishing. Bladder is a vital component as the layout of the ball, because it is the basic layer that guarantees a ball leaky or not. During the production process, there is an ongoing bladder products which do not comply with the specified quality standards of the company. The type of defect that occurs are cutting defects, mixing defect, vulcanizing defect, packpress defects, defective bonding disability, tire valve defects, and defective sticky. Therefore it needs further research to assist companies in reducing bladder defect and to achieve the best product quality for the consumer.

The methods used in this study is Six Sigma with DMAI phase (Define, Measure, Analyze, Improve) and Poka Yoke. Define phase is used to identify problem products. Measure phase is conducted to measure the defect identified in the bladder. Analyze phase is done by analyzing the factors that influence the failure of the product using the cause and effect diagram (cause and effect diagram) and find the cause priorities of the failure in the product, and make improvements recommendations with the use of FMEA (Failure Mode and Effect Analysis). In Improve, the improve recommendations is done based on the results of the FMEA with the highest value of RPN. Poka Yoke used to be able to detect errors from the source to achieve zero defects.

The results of the research by using six sigma is there are 7 types of disability based on the identification of CTQ. In bladder process, the sigma rate average is 4.60 sigma, with 1,907.75 possibility of damage to one million production (DPMO) and process capability value of 1.53. Cause factor affecting the occurrence of defects in the bladder are influenced from a variety of factors, including the factors of environmental temperature in the vicinity of the machine is high, uneven mixing of raw materials, less lighting, less concentration of operators, and there is no timer on the vulcanizing machine so that the bladder is not in the same cooking time. The proposed improvements that can be made based on the factors is to make stacking shelves that serve as a rallying point for bladder while in a hot condition after processed in the vulcanizing machine, and then waiting before going to the storage. The proposed improvements with Poka Yoke method is to do a simple timer installation to make cooking time on each mold in each machine in vulcanizing process are in the same time.

Key Words: Bladder, Six Sigma, Poka Yoke, Cause and Effect Diagram, FMEA.

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