

## Framework Study on Single Assembly Line to Improve Productivity with Six Sigma and Line Balancing Approach

**Authors :** Inaki Maulida Hakim, T. Yuri M. Zagloel, Astari Wulandari

**Abstract :** Six sigma is a framework that is used to identify inefficiency so that the cause of inefficiency will be known and right improvement to overcome cause of inefficiency can be conducted. This paper presents result of implementing six sigma to improve piston assembly line in Manufacturing Laboratory, Universitas Indonesia. Six sigma framework will be used to analyze the significant factor of inefficiency that needs to be improved which causes bottleneck in assembly line. After analysis based on six sigma framework conducted, line balancing method was chosen for improvement to overcome causative factor of inefficiency which is differences time between workstation that causes bottleneck in assembly line. Then after line balancing conducted in piston assembly line, the result is increase in efficiency. Efficiency is shown in the decreasing of Defects per Million Opportunities (DPMO) from 900,000 to 700,000, the increasing of level of labor productivity from 0.0041 to 0.00742, the decreasing of idle time from 121.3 seconds to 12.1 seconds, and the increasing of output, which is from 1 piston in 5 minutes become 3 pistons in 5 minutes.

**Keywords :** assembly line, line balancing, productivity, six sigma

**Conference Title :** ICMO 2016 : International Conference on Manufacturing and Optimization

**Conference Location :** Bali, Indonesia

**Conference Dates :** October 13-14, 2016