

ABSTRACT

XYZ company is one of the companies engaged in manufacturing with production output in the form of automotive motor spare parts that have various shape product. One of the company's work areas is spot welding which has three identical parallel machines that operate to do 16 jobs. Production scheduling used by XYZ company still uses the random method, only by scheduling based on machine capacity without any sequence of jobs being done, where the company only provides daily production targets given to operators. From the data for February 2021, the actual scheduling has a very large completion time difference between machines or the machine loading is uneven. As a result, makespan becomes long with a value of 440000 seconds or 26 days. Therefore, this research aims to minimize the existing makespan, by scheduling proposals to help XYZ company. This research uses the suggested algorithm method, where this method has a small number of iterations and has optimal result. The suggested algorithm method begins with the longest processing time sequencing rule which is used as the upper bound for the first iteration, which is then continued to calculate the lower bound and load machines of the three identical machines. This calculation stops at the 15th iteration because the makespan value exceeds the lower and upper bound limits, so that the optimal scheduling taken is scheduling in the 14th iteration with a makespan value of 914412 seconds or 16 days, where the results of the suggested algorithm method can minimize the makespan of the condition actual 38%.

Keyword – Identical parallel machine scheduling, Longest Processing Time (LPT), suggested algorithm, makespan, spot welding.