ABSTRACT

Setup time is the time required to prepare for work operations. There are factors that affect the setup time of machine, namely operator ability and experience, availability of setup tools, machine configuration, and machine routing. Changes in machine routing affect the speed of setup time because the equipment needed to setup each machine are different. In DM2000 at PT. Dirgantara Indonesia, there was a change in machine routing for Operation 0300 Joining Part. This caused the setup time to take up 13% of the total operation time of Operation 0300 Joining Part. The main cause of this problem is there is an assembly activity between the rotary chuck and the plate while adjusting to the size of the workpiece. So the problem that will be studied in this final assignment is to design a special fixture for Operation 0300 that is easy to setup and transport by one operator to reduce the large setup time in Operation 0300.

Setup time is the time required to prepare for work operations. There are factors that affect the speed of machine setup, namely operator skills and experience, availability of setup tools, machine configuration, and machine routing. Changes in machine routing affect the speed of setup time because the equipment needed to setup each machine is different. In DM2000 at PT Dirgantara Indonesia, a similar thing happened, namely a change in machine routing in the 0300 Joining Part operation. This caused the setup time to take 13% of the overall 0300 operation time. The main cause of the problem is that there is an assembly activity between the rotary chuck and the plate while adjusting to the size of the workpiece. So the problem that will be studied in this final project is to design a special fixture for 0300 operations that is easy to setup and transport by one operator to reduce the large setup time in 0300 operations.

PT. Dirgantara Indonesia is a company with a pull process because it produces according to orders. Companies with a pull process are very suitable for implementing the principles of lean manufacturing because they will run optimally. There are two tools in the principles of lean manufacturing that can overcome the problem of setup time, namely work cells and Single Minute Exchange of Die (SMED). In the current condition, PT. Dirgantara Indonesia has implemented a work cell, but to maximize and overcome the problems that occur, this final project will use the SMED tool. SMED is a step taken to analyze a series of setup activities. The results of the analysis can be used as a statement of needs to improve current conditions. After obtaining a statement of needs, a stage is needed to help make the solution real, so that the concept generation and concept selection stages will be used.

After following the series of frameworks, the results of the concept that will be developed are center locking workpiece holding made of aluminum material with a locking method between workpieces. The selected concept will be detailed so that it can be fabricated accurately. After being fabricated, the formulated proposal can be tested. The test results show that the setup time is 1 minute 53 seconds or an increase of 86%.

This final project provides a real and measurable solution that is better than the previous setup conditions. The solution that has been provided can increase the company's productive time by shortening the operating cycle time, so that it can encourage productivity and machine utilization in the company. This final project is expected to inspire to continue to develop and optimize all assets owned by the company.
Keywords: Setup Time, Lean Manufacturing, SMED, Fixture Design