

## ABSTACK

*In supporting government policies to convert the use of kerosene to LPG, the government must also provide the LPG gas cylinders. The government is cooperating with PT XYZ to meet the supply of LPG gas cylinders. One type of cylinder produced by PT XYZ is a 3 kg LPG gas cylinder. To produce these gas cylinders there are three work areas namely pressing, welding and finishing. At present PT XYZ has not been able to meet customer requests in a timely manner, this shows that there are problems in the production process of 3 kg LPG gas cylinders. To find out the problems that occur, then we compare the cycle time and takt time at each workstation in each work area. It was found that the difference between the largest cycle time and takt time was in the finishing area with a time of 16.44 seconds.*

*Based on this, further identification was carried out in the finishing area using a lean manufacturing approach and found waste transportation. Based on these problems, a study was conducted with the aim of identifying the causes of waste transportation and designing proposed improvements to minimize waste transportation in the production of 3 kg LPG gas cylinders at PT XYZ. By using a fishbone diagram it was found that the root cause of waste transportation was due to the absence of MHE at several work stations so that the displacement was carried out by the operator, as well as the existence of an additional wind discharging process that impeded the operator's path when moving the product, as well as the placement of workstations that were less close together. Then by using the Pareto and 5W + 1H diagrams, a proposed improvement is made in the form of layout changes using BPLAN90 software.*

*The result was obtained that the total displacement distance was reduced from 70819.5 meters to 51886.5 meters for 1331 pcs of products. For the total transfer time of one product reduced from 89.05 seconds to 63.93 seconds. However, if a leak is found on the high pressure leak test workstation, the total transfer time of one product from the initial process to the defect leakage area from 72.71 seconds to 53.12 seconds. It also made changes in lead time from 1120.34 seconds to 1095.23 seconds.*

*In this study, the actual data and layout conditions obtained were put to good use, so as to produce maximum improvement suggestions. The results of the proposed improvements are simulated using flexsim software. The percentage of the effect of the proposal on the achievement of production which is presented in the background is obtained by 42.85%. Based on this, it can be concluded that simply changing the layout is not enough to meet the production target per day of the 3 kg LPG gas cylinder at PT XYZ. Improvements must be made to each of the root causes of transportation waste found based on the fishbone diagram and other identified types of waste, especially waste waiting which has the greatest influence on production time, so that the production target can be achieved.*

*Keywords: lean manufacturing, waste transportation, takt time, BPLAN90*