

## **ABSTRACT**

*As the development of the industrial world increasingly rapidly led to openness of competition between the automotive industry. PT XYZ is one of the automotive automobile industries, the company has two assembly lines for each lane having a Trimming Line and Mechanical Line area. At this time there is increasing demand for S-class types which results in a previous production target of 7 units / day to 10 units / day. In this condition, the Mechanical Line 2 assembly line cannot meet the production target / day. There is a bottleneck on some work stations, due to an imbalance in allocating work elements to the work station beyond the specified takt-time time (SALBP-1). Based on the predetermined time variables, the final goal of this study is to balance assembly lines by minimizing the number of work stations, increasing the efficiency of assembly lines and achieving production targets. In this study, balancing the Mechanical Line 2 assembly line was carried out using the Genetic Algorithm (GA) method which had population initials based on the results of heuristic calculations (Priority Rule-Based). Balancing the assembly line method produces an allocation of work elements for each work station that has a better performance index and minimization from the previous work stations 13 work stations to 12 work stations. The line efficiency performance index increased, previously 85% to 92%. The previous decline in smoothness index was 7575.51 to 745.07. Increasing the production capacity of the parchment line to 10 units / day before 7 units / day.*

**Keywords: Assembly Line Balancing, Priority Rule-Based, Genetic Algorithm (GA), Performance Index.**