

ABSTRACT

Along with the increasingly rapid development of the industrial world, causing competition in fulfilling consumer demand, companies engaged in the aviation industry continue to improve. PT. XYZ is a manufacturing industry company that produces airplanes. Based on actual conditions, PT. XYZ has a demand of 6 units per year, but the production has not yet reached the target. The component assembly process has problems because there is waste waiting in the nose fuselage assembly caused by the uneven workload of each work station with a maximum cycle time of 326,14 hours and a minimum cycle time of 119,63 hours. To solve these problems, balance the assembly line by reducing the number of workstations and increasing the efficiency of the assembly line. This study carried out balancing the assembly line using the Genetic Algorithm (GA) method. The result of balancing the assembly line with this method is a reduction from the number of work stations which were previously six work stations, to 4 work stations, an increase in actual line efficiency by 54% to 91%, and a decrease in the smoothness index by 408,337 to 89,78. The proposed result of balancing the nose fuselage assembly line resulted in a better assembly line than before.

Keywords: Genetic Algorithm, assembly line balancing, waste waiting