

## **ABSTRACT**

*The balance in the placement of work elements and workloads on an assembly line can impact the efficiency of the line. With the time of the station uneven, there can be idle time on the line so that ineffectiveness occurs. In solving the issue of assembly line balance requires allocation of station time evenly and minimum calculation time so that production targets can be achieved. Research conducted at PT X is a state-owned enterprises that engaged in the field of Alutsistas (armament System) and commercial products. The work station applied is a single model. The method used is the Meta-heuristic method of Genetic Algorithm which is used to balance the base frame assembly line and sub-assembly in the Excava 200 assembly. Therefore, the line efficiency increased by 65% in proposed scenarios meet the needs of the takt time with workstations from 4 workstations to 1 workstation of 100% of the actual state of 60.45% and in the utilization of existing stations 4 workstations increased by 90.49% for the base frame assembly line. The sub-assembly line has a line efficiency of 100% by merging each sub-assembly type into 1 workstation. For demand increase by 20% line efficiency increased to 100% with 1 workstation.*

*Keywords: assembly line balancing, genetic algorithm, single model.*