

## ***ABSTRACT***

*PT. XYZ is a company that manufactures Electric Motor products. This study examines the assembly line of Sub-Assembly Stator Complete, sub-assembly of product BLDC 5 kW Electric Motor. The problem that occurs is that there is a time imbalance that causes a bottleneck and waiting time. In addition, cycle times are higher than takt time, which the company cannot achieving the production target. So, this study aims to design a assembly line by increasing line efficiency in order to achieve production targets and designing assembly lines if there is an increase in demand by 20% in the next year using linear programming methods using standard time to allocate work elements to each work station with LINGO software 18.0 version and simulation uses observation time to validate and verify the results of the allocation of work elements on the work station with Arena Simulation software 14.0 version. The results of this study are the proposed assembly line with the number of work stations is 17 work stations, increasing line efficiency from 41.48% to 80.51%. Whereas, if there is an increase in demand of 20% in next year, the assembly line with the number of work stations is 29 work stations, has a line efficiency of 79.35%. Based on the results of the proposed assembly line that the company can achieve the production target per day.*

***Keywords: Line Balancing, Stator Complete, Linear Programming, Simulation***