

## ABSTRACT

The assembly line balancing (ALB) is the most essential parts for many kind of manufacturing industries which required to control and supervise carefully. One of ALB model is Mixed-model assembly line. The mixed-model line usually copes with products that have different variants. In the mixed-model line operations are similar for different variants, so it does have any resource constraints for assembling, but may have different operation times for different variants. It can manufacture different products in the same assembly line, providing flexible production according to demand from customer. The success of achieving the goals of production is influenced significantly by assembly line balancing. Most of manufacturers and researchers make a try to look for the best methods to keep the assembly line in production floor stay balanced. This research is done to help the company especially in the process of assembly line in Trimming Area of BMW F30, F15 and G30 which is used for improving the productivity in the assembly line particularly to increase line efficiency and decrease smoothness index. The authors consider the Ranked Positional Weight (RPW) as the method to solve those problems and the results show the significant change from the decreasing of Cycle Time (CT) or Takt Time which is initially 41 minutes to become 25.28 minutes. The results create the workload allocation of those 3 (three) BMW variants become feasible and can improve the assembly line productivity.

***Keywords: Assembly line balancing (ALB), Ranked positional weighted(RPW), mixed-model assembly line balancing problem (MALBP), Line Efficiency Smoothness Index.***