

ABSTRACT

The fast-paced development of industrial world and the competition in meeting customer's demand have made the aviation companies continue to make improvement. NC212 is a one of the type propeller plane produced by PT Dirgantara Indonesia. However, based on this research observation of the actual condition, there is a demand for 6 units per year, but the production output has not met the expectation yet. NC212 Component Assembly Division handles critical activity, one of them being the nose fuselage structure assembly. There are three work stations in the assembly process with significant different time allocation, jig B1 of 598 hours, jig B2 of 119,99 hours and jig B3 of 399,61 hours. So it can be said that causing uneven work element and operator time allocation of the assembly. Furthermore, the research found station time incompatibility with the takt time of nose fuselage structure indicating output differences in each work station which further influence the success of an assembly line. The research finds that it needs balancing process in assembly line and minimizing idle time in every workstation using Multi-manned Assembly Line Balancing Problem (MALBP) approach. The research uses first model of mixed integer programming to minimize cycle time and to be an input for second model to be further used for determining the appropriate number of operators and allocating fair workload. The problem is solved by increasing actual line efficiency from 62,30% to 75,33%, and decreasing the smoothness index from 517,54 to 155,51. The proposed suggestion in balancing the nose fuselage structure assembly line results in better output.

Keywords: Assembly Line Balancing, Multi-manned Assembly Line Balancing Problem (MALBP), Mixed Integer Programming