

Team 4

AER1601: Aerospace Engineering & Operations Management

Q400 Aircraft Line Balancing of Bay 5

Executive Summary

During the last quarter of 2017, the team worked with Bombardier Aerospace's Toronto facility to develop recommendations for resource allocation and line balancing for Dash 8 - Q-400 aircraft's final assembly line. Since the Final assembly line is significantly big, our analysis was only focused on the activities in Bay 5.

Through discussions with our client as well as personal research, a solution criterion based on the core values of "Lean Manufacturing" was developed. In particular, the team has provided recommendations that are consistent with lean manufacturing's individual piece flow model, which minimizes time and improves efficiency. The team evaluated line balancing in one of Bombardiers' production bays to minimize inefficiencies in throughput and optimize the utilization of space.

By applying lean manufacturing principles, the team was able to create a visual representation tool in Microsoft Excel. Furthermore, to develop a network diagram and increase the efficiency of final assembly line, the team used Microsoft Project. This allowed the users to trace interconnections on a particular activity, as well as, cross-check the various permutation and combination of data movements and its impact on the line balancing.

Finally, the team proposed four alternatives to improve the variance with respect to the existing case. The methods used consisted of standard work processing times and considered number of shifts along with the number of workers assigned to each task. This study attempts to test a new paradigm of the workload balance, which is based on a dynamic allocation of the assembly operations. The results obtained show a significant improvement as it balances the line by 10%.