Customer Challenges and Need

An airframe manufacturer had a very large order backlog for a first-to-market airplane. The company's business plan called for doubling current throughput rate. As the company started to ramp up production, it was faced with many difficult questions:

- How many people do we need?
- How many assembly tools do we need?
- How big of a factory footprint do we need?

Project Summary

The project requirement was to develop a throughput improvement roadmap so that plant layouts, hiring and training plans, and tooling purchases can be evaluated using a virtual setting provided by simulation modeling and analysis.

Solution Overview

PMC developed a discrete event simulation of the entire airplane assembly process from laying the keel through final flight test. The model was validated using a baseline scenario which confirmed system constraints and waiting times caused by NCR (Non-Conformance Reports) and high variability in assembly cycle times.

Variation in System Throughput before Implementing Changes
The simulation model was used to:

- Select the best possible alternative to break the constraint by evaluating available options,
- Quantify throughput improvement at each step of the throughput improvement roadmap,
- Test the robustness of the final plan by conducting sensitivity analysis on critical system parameters.

**Before**

- High waiting losses

**After**

- Reduced waiting losses

---

Benefits and ROI

- Established production plan to double the production from 0.59 plane per day to 1.2 planes per day.
- Quantified further possible improvement in throughput with the current plant footprint.
- Identified and eliminated waste which resulted from excessive work-in-process inventory and under-utilized production personnel.
- The throughput improvement road map drove plant layouts, hiring and training plans, and tooling purchases.

---

To find out more about how PMC can help your company improve productivity, please visit us at www.pmcorp.com, call 313-441-4460, or email sales@pmcorp.com.