



Project Summary

How an Aircraft Parts Manufacturer Sacrificed Efficiency to Gain Productivity

The Problem: Missed Delivery Dates

What would you do if one of your production processes experienced significant overtime but still consistently missed delivery dates? Would you consider adding additional machinery, another shift, or extending the lead times? After its first year of operation, a production cell that created airplane panels for four models was in trouble.

Initial Analysis Was Puzzling

An equipment and manpower study showed that overall processes were operating at less than 30% capacity. Clearly, adding extra machines wasn't the issue, and adding staff would be as unproductive as the overtime appeared to be. There was lots of spare capacity in the system; it just wasn't being utilized. Setup times for the different panels weren't the problem because the production cell produced each panel type in batches for optimal efficiency.

A Lego Simulation Revealed the Issue

To investigate further, a table-top Lego-based simulation of the entire process was created by working closely with managers, supervisors, factory workers, and support groups. After several simulations, the breakthrough issue was revealed to be a set of processes that were being overloaded. The resultant backlogs were causing unpredictable throughput times – so parts that were meant to take hours, were taking multiple shifts, to be produced.

The Solution: Switch to a Less Cost-Efficient Part Sequencing Order

The simulations revealed that by simply staggering the panel types produced throughout the shift, the critical bottleneck would rarely be overloaded, and the panels would flow through the system smoothly. As soon as this was appreciated, changes were made at the next shift, with absolutely no implementation costs. Whereas previously the entire quota of the first panel type would be produced, then the second panel type and so on, now one panel of type 1, three of type 2, two of type 3, and two of type 4 would be produced. This simple sequencing change resulted in immediate benefits which far outweighed the cost and time loss of the frequent retooling. As soon as the new sequencing was in place, throughput went up, delivery times became highly predictable, and overtime was completely eliminated.

The Takeaway

Sometimes common-sense doesn't actually make sense. Batching the panel types together had been thought of as being the best way to gain efficiency, but was in fact the root cause of the problem.

