

Lean Analysis for Appliance Assembly Throughput

Major U.S. Appliance Manufacturer

Success Story

Manufacturing



BACKGROUND

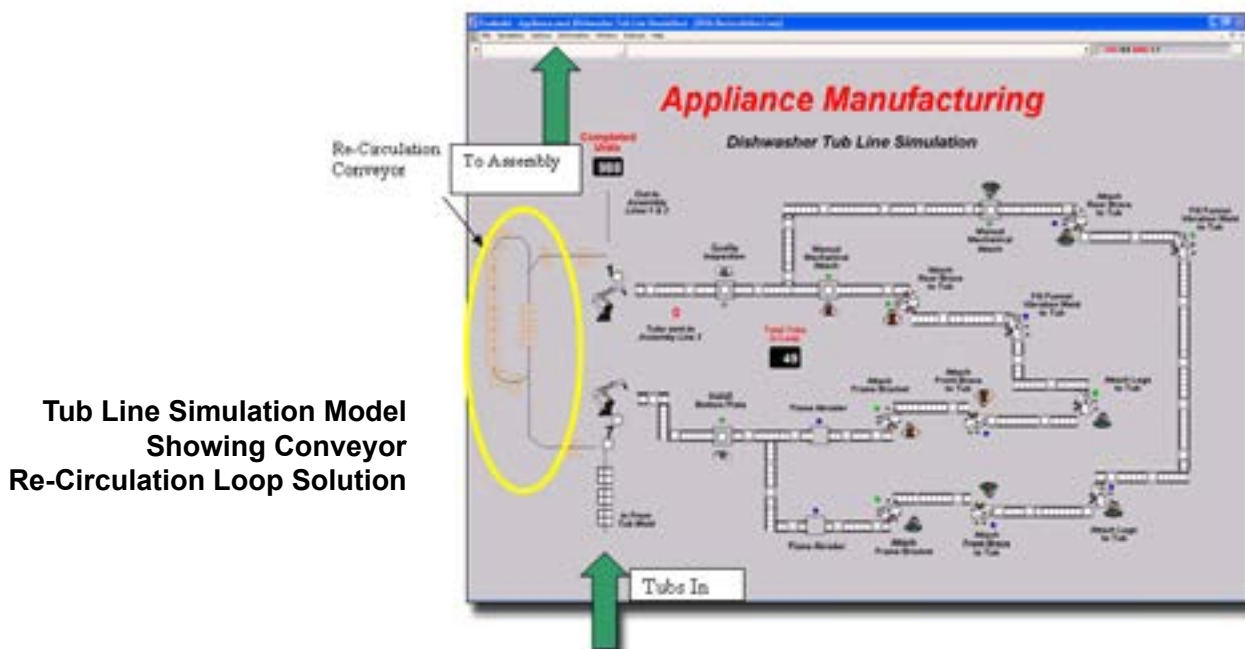
Throughput from the dishwasher tub line was not keeping pace with demand from the final assembly area. In order to increase the tub line throughput, the client added an extra shift at an annual cost of \$275,000. The additional shift should not have been necessary given that the takt time for all tub operations was less than the required takt time at final assembly

PROJECT OBJECTIVES

- Quickly determine the reason(s) for the inability of the tub assembly area to produce at the rate required to feed the final assembly lines. After determining root cause, the client wanted to identify and test potential changes, and then implement the most cost effective solution.

SOLUTION

After months of traditional analysis with no definitive answer, ProModel was engaged to develop a simulation model to mimic the tub assembly operations, including the entire material handling system. The model was run under existing operational assumptions and found to be a valid representation of the actual system. Proposed changes to the system were then tested through “What If” scenario analysis and the most cost effective solution was found to relieve the problem.

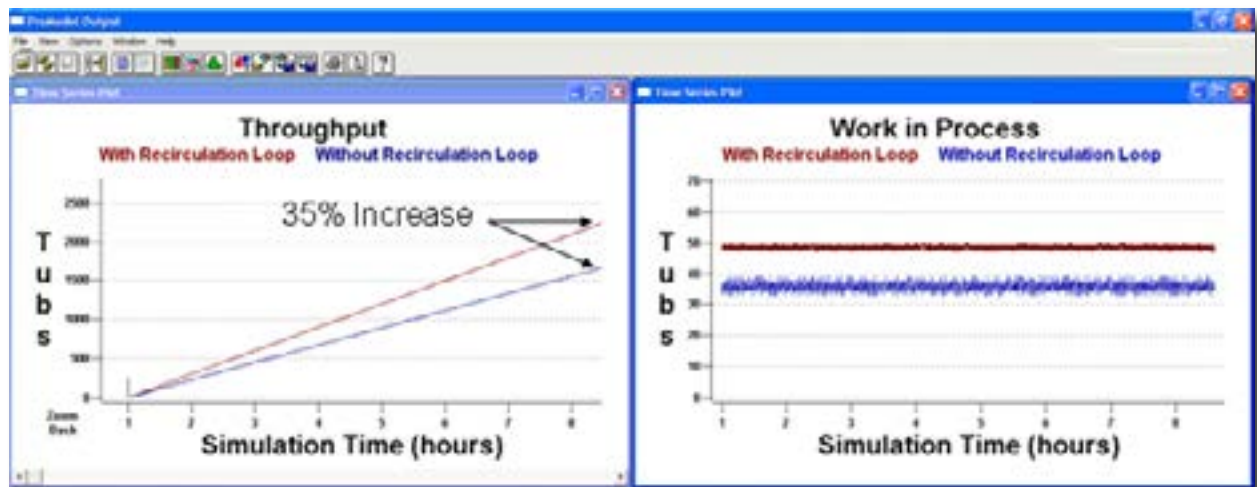


Tub Line Simulation Model Showing Conveyor Re-Circulation Loop Solution

RESULTS

Counter-intuitive to expectations, no bottlenecks were found at the individual assembly stations, or in the material handling system which delivers raw tubs to the assembly line. However, a closer review of the material handling system showed that the loading process for placing raw tubs on the start of the conveyor line was constrained by a lack of space for empty carriers moving downstream to the “tub-to-final-assembly” loading station. A proposal was made to incorporate a previously used recirculation loop portion of the overhead conveyor system. The loop allowed additional empty carriers to queue between the raw tub unloading station and the finished tub loading station. This change effectively supplied more inventory to the parallel tub assembly lines, thereby increasing the utilization of the assembly stations and realizing the required system takt time while eliminating the need for the additional shift.

Comparison of Throughput & Work in Process



KEY BENEFITS

This project was completed in two weeks using ProModel software and services. By eliminating the additional shift, the company realized an annual savings of \$275,000. The ROI in the first year alone from this project was % 1,100 and the payback period was less than 2 months.

