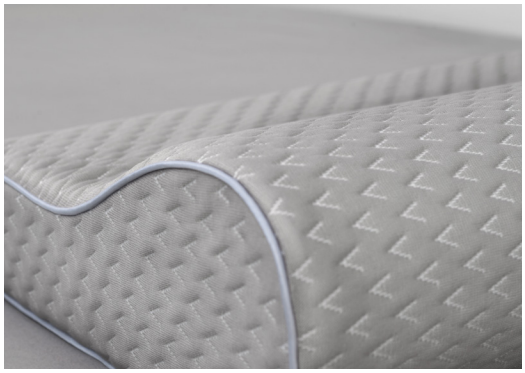
Plant Consolidation & Manufacturing Optimization

Pillowtex Corporation

Success Story

Manufacturing & Logistics



BACKGROUND

Pillowtex is $2.2 billion company that manufactures pillows, mattress pads, comforters, towels, and sheets. Pillowtex had recently filed for bankruptcy and desperately needed to cut costs and regain profitability in the next 18 months or face the prospects of going out of business. It had five plants in the United States; all making the same three products (pillows, mattress pads, and comforters), all using identical equipment. Each plant had similar total floor space, but had different layouts, different material handling methods, different cycle times, and different costs.

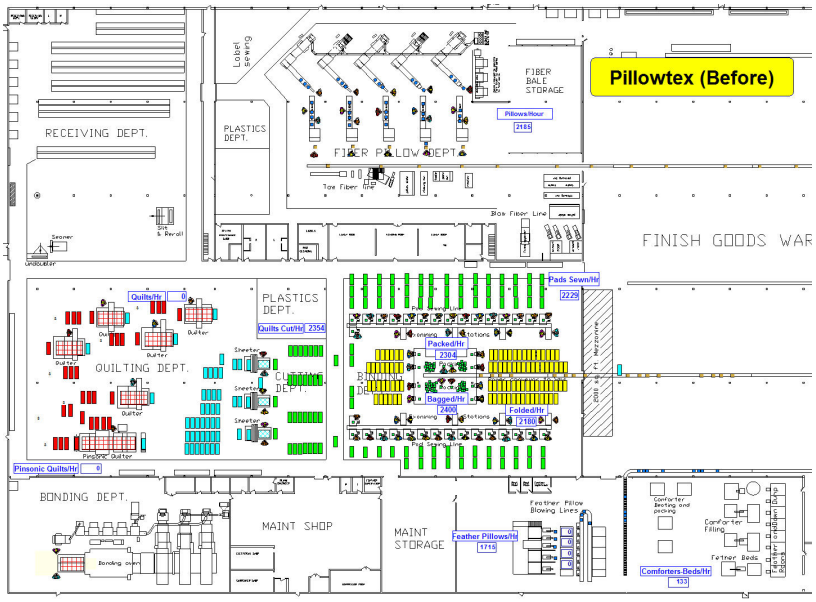
In order to cut costs and regain profitability, company management felt that they needed to close some plants and develop a best practices strategy for the manufacturing operations in the remaining plants. That would mean developing an optimized layout and material handling system and then predict the "new" capacity of each plant so that they could decide on how many and which plants they should close.

A complicating factor was that customer order-to-delivery time must not increase, even though shipping distances (by truck) would increase due to fewer plants. That translated into the need to reduce manufacturing cycle times, so customers like Wal-Mart didn't see an increased order-to-delivery time and refuse the delivery or charge Pillowtex exorbitant late fees.

PROJECT OBJECTIVES

The plan was to model the layout and manufacturing practices of the best performing plant (the "before" model), and then run experiments with different layouts and manufacturing techniques until it was considered "optimal" (the "after" model). Improvements between the two models could then be measured and recommendations made to management as to which, if any, plants could be closed.

Before Model



SOLUTION

A design concept was created using lean manufacturing techniques. This design eliminated all work-in-process buffers, and sequential processes were linked together wherever possible to eliminate material handling. Careful line balancing experiments were conducted to get the lines to their optimal configuration and performance. With these changes, the factory could be laid out in a much tighter arrangement, so machines from other plants could fit in the floor plan. The after model, showing the performance of the new design, was so surprising and successful that the results were almost too good to believe.

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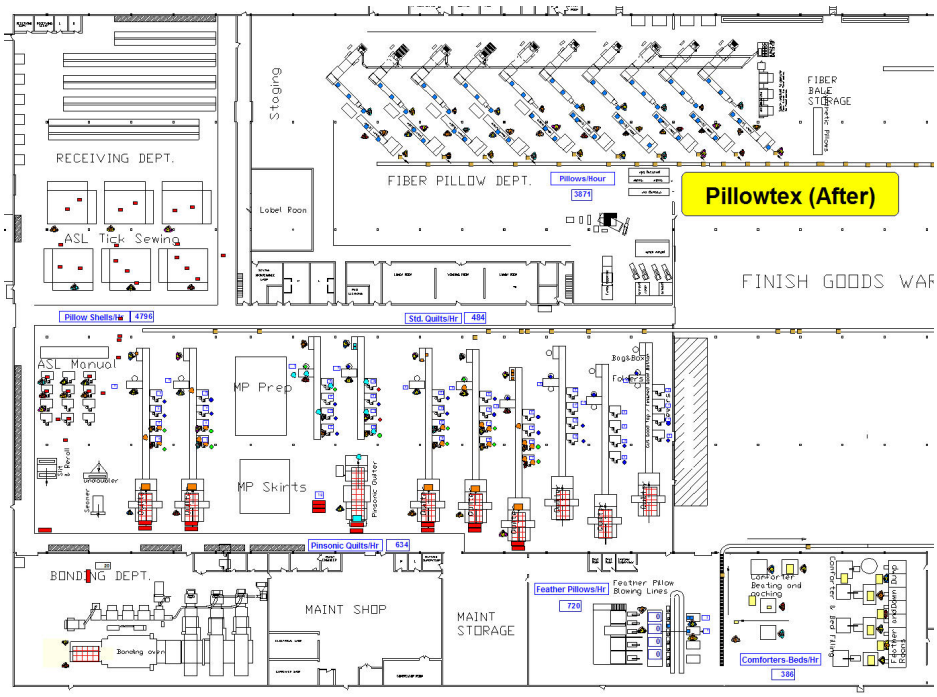
SOLUTION

After Model



RESULTS

In the old layout there were 343 material carts, always filled with roughly 40-50 orders of material in the mattress pad area. That area also required three, full-time, material handling people to constantly push these carts around. Things were so congested that orders were frequently getting lost and the average manufacturing cycle time approached five days.

In the new layout, each machine was in-line with the next process machine. This created a continuous flow of product from start to finish, with no stopping, and more importantly, no carts acting as work-in-process buffers. All 343 material handling carts were eliminated and the three material handling people were reassigned to line positions. Furthermore, the factory floor space requirements were about half of what they were before. This meant that three plants (of this design) could easily do the work of the five previous plants with room to spare. In the after model, the manufacturing cycle time showed a reduction from 120 hours (five days) to less than one hour, a 99% reduction. The work in process showed a reduction from thousands of orders to just those orders running on each line, about a 95% reduction.

As a side bonus, because of much more efficient processes, not all of the equipment from other two plants would need to be moved (additional savings). Supervision labor, maintenance labor, material-handling, office personnel labor would all be reduced substantially. The reduction in manufacturing cycle times more than made up for the extra day or so of delivery time. It was forecasted that the improved cycle times would increase sales due to the competitive advantage of shorter order-to-delivery times.

KEY BENEFITS

Total savings were based on closing two plants and all the associated costs (moving equipment, factory lay-outs, moving/hiring people, etc) coupled with the previously noted cost savings. Completion of this project resulted in a net savings of $12.2 million, with a payback period of nine months.

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