

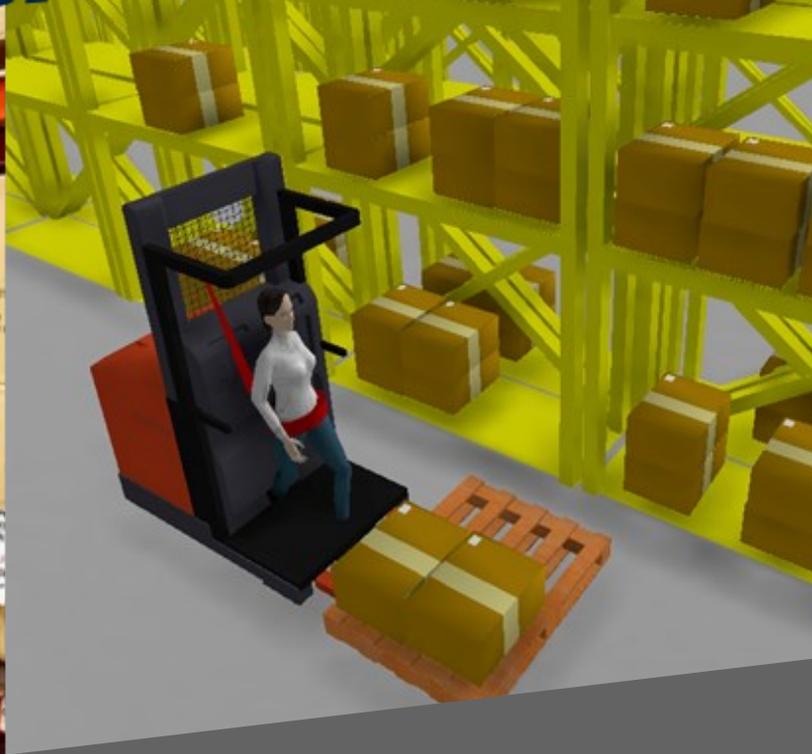
Common Materials Supermarket



*Materials Replenishment
Design & Optimization*

Manufacturing

CASE STUDY



MOSIMTEC™
predict. decide. improve.

A large tractor manufacturer was moving storage of parts to a common materials supermarket for three of its large assembly lines. This common material supermarket approach would allow the manufacturer to maintain a just-in-time replenishment strategy, keeping minimum inventory on hand, and optimize delivery to all assembly lines. This approach would also allow the manufacturer to dedicate less floor space to each assembly line, as a smaller number of parts would be stored line side and then replenished as needed.

This new system presented many unknowns for the manufacturer. Simulation modeling was identified as the best way to understand the system's behavior and adjust plans accordingly to ensure assembly lines were never starved for parts, while the supermarket operated in a cost effective manner.

Applying Modeling & Simulation

A discrete event simulation model was developed utilizing the Simio® Simulation Software. The data-driven model included demand profile consisting of 3,000+ part types requested from the assembly lines, which triggered replenishment orders to the materials supermarket. The impact of various truck-building and delivery options from various suppliers were considered for the inbound materials. The model was used to evaluate arrival schedules and inbound raw material batching strategies in order to work with vendors for an arrival-of-goods pattern optimized for the manufacturer.

Within the materials supermarket, operations were modeled at a detailed level. Some of the model components included:

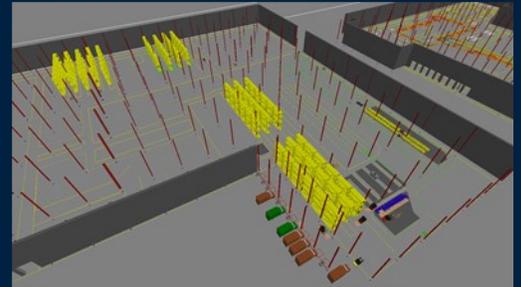
- Dock door considerations and experimentation with trailer-to-door assignment algorithms
- Staging area constraints and staging policy evaluation
- Labor resource requirements and evaluation of work assignment approaches to maximize efficiencies
- Replenishment strategies for open orders, including determining best configurations and deployment of vehicle fleet comprising of tugger, dolly, quad steer cart systems, forklifts, and order pickers

Benefits & Value from Simulation

The benefits of working with MOSIMTEC to model the Common Materials Supermarket were significant and covered multiple facets of system. While the client originally planned to utilize simulation as a one time design exercise, they have been so pleased with the results that the simulation model is now being adapted for use as an on-going operations planning tool.

Some of the early benefits of the simulation-based design evaluation exercise were:

- \$240,000 in *annual* labor savings through implementing recommended workload assignment approach
- Reduction of trailer processing times by 50% through trailer-to-door assignment optimization
 - This improvement also reduces the number of dock doors required for current operations and allows for future growth without adding additional doors
- The customer has confidence that the Common Materials Supermarket can adequately supply the three assembly lines with the required service levels



About MOSIMTEC, LLC

MOSIMTEC is a Washington, D.C., based business, assisting clients in making better decisions through the application of advanced decision support tools. The MOSIMTEC team has extensive experience working with leading computer simulation software. We help predict outcomes, prescribe actions, and improve operations for clients across various industries.



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