Dry Nutrients Facility

Belvedere, New Jersey

Facility Planning & Analysis Services

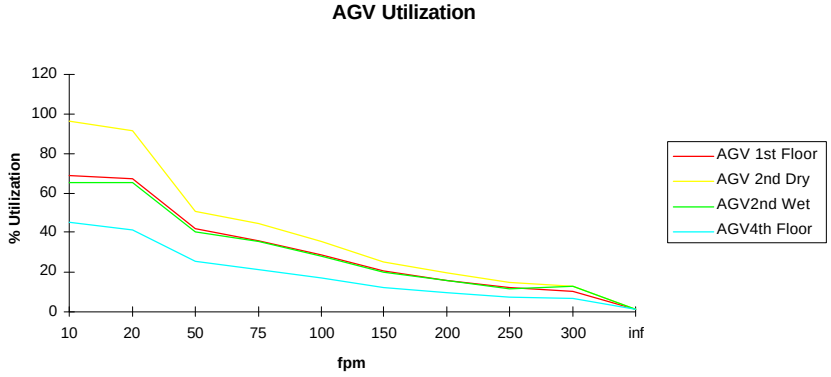
- Facility Layout Design and Optimization
- Simulation Modeling
- Equipment Specification
- Cost Estimating

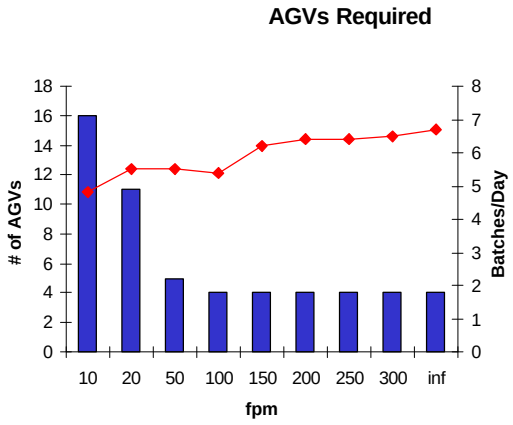
Our staff was included in a team to design and build a state-of-the-art Dry Powder Premix Facility for a vitamins and fine chemicals manufacturer. Our expertise was called upon to assist the design team in evaluating the performance of several different competing conceptual designs. Each design varied in the degree of automation, capital cost, and labor requirements. We determined through the use of simulation that a design using automated guided vehicles (AGVs) rather than a conveyor system would produce the required throughput with a minimal increase in operational cost and approximately **$2 million** avoidance in capital cost.

New State-of-the-Art Dry Nutrient Premix Processing Facility

Once the conceptual design was agreed upon, the simulation model was refined and used to determine the number of AGVs required. The simulation model was also employed to aid in the development of the specifications for the AGVs. Through the use of the model, the minimum and maximum required forward and reverse speeds of the AGVs were determined. This data was important when working with equipment vendors to purchase a properly-sized AGV.

Finally, the simulation model was used to determine optimal placement of storage racks and equipment that maximized the throughput of the system by optimizing the fork truck and AGVs material handling path network. A **10%** increase in productivity was realized through the use of an improved layout. The new 47,000 sq.-ft. Dry Powder Premix Facility was completed under budget and on-schedule two years after the start of the conceptual design phase.





Through the use of a dynamic simulation model, the required number and speed of the AGVs were determined. The graph to the right was used to explain that a fast AGV (>200 fpm) was not necessary and slower, less expensive one could be designed. The graph above demonstrates the average utilization of an AGV versus its forward speed.

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