



Door Installation Area Simulation

PROJECT SUMMARY

The project was a simulation of door installation area, which used floor conveyors to move automobiles on skids through a body shop. The simulation was used to determine if all of the conveyors designed into the system were actually needed to meet throughput requirements.

SYSTEM DESCRIPTION

A skid arrives at the door installation area on a non-accumulating conveyor. The skid moves across a power roll conveyor and to a second power roll conveyor. At the second power roll conveyor, front doors are installed onto the automobile. The skid moves across a third power roll conveyor and to a fourth power roll conveyor. At the fourth power roll conveyor, rear doors are installed onto the automobile. The skid then moves across a fifth power roll conveyor and onto a cross transfer conveyor. One skid per hour moves along the cross transfer conveyor to an inspection station. After the inspection, the skid moves back along the cross transfer conveyor and is reinserted into the main stream of skids. The skid then moves to a sixth power roll conveyor and onto a second non-accumulating conveyor. The skid is then moved out of the system.

OPPORTUNITY

The client wanted to determine if the fifth and sixth power roll conveyors necessary for the area to meet its throughput requirements. (Previous simulation work on other systems determined that the other power roll conveyors were necessary).

APPROACH

The objective of the study was to determine the minimum cost system design that would sufficiently meet the required throughput of the door installation area.

SOLUTION

A simulation model was written in ARENA for the door installation area. The model was written to allow the user to remove the first, third, fifth and sixth power roll conveyors from the system, and to change operation times and conveyor speeds. The simulation determined that the fifth and sixth power roll conveyors were necessary for the system to meet the required throughput rate. The simulation also showed that the sixth power roll conveyor did not have to be as fast as the other power roll conveyors in the system, so a less expensive conveyor could be used.