



MATERIAL FLOW ANALYSIS PROJECT

PROJECT SUMMARY

Management required:

1. Identification of opportunities to reallocate 22 forklift drivers
2. A reliable tool to update and reallocate headcount for new and varying production run schedules
3. Reliable assessments of bar-coding proposals relative to their material-tracking and headcount-reduction potentials
4. Identification of traffic congestion points and comparisons of their severity
5. Recommendations for effective fleet management and for tracking of material-handling equipment.

Material flow analysis of an integrated automotive stamping and assembly plant. The project involved:

- Developing a static and dynamic simulation model of material flow through the plant
- Validating and updating plant's databases pertinent to material handling activities, including development of standards and recommending a minimum twenty-two headcount re-allocation
- Study existing use of bar coding and assess material handling vehicle fleet tracking system deployed in the plant
- Performance of continual and elemental time studies to support simulation and material flow analyses

SYSTEM DESCRIPTION

- The project setting was an automotive OEM integrated stamping and sub-assembly plant. It was one of the largest stamping plants in the automotive industry, occupying 2.5 million square feet. Stamping activities were spread across twenty-three press lines. The output from the stamping lines then passed through the sub-assembly area, before being shipped out of the plant. "Material flow" in general is linear, where raw material enters the plant at the northern end, is stamped, assembled, and leaves the plant via shipping docks on the southern side. Transport of material (which is housed in containers or racks) is through either forklifts or dolly trains as necessary.

OPPORTUNITY

- Identify a minimum twenty-two head count reduction/reallocation of Indirect Labor person-assignments across shifts.
- Develop simulation tools capable of change impact evaluation for different production schedules and deployment of material handling resources.
- Identify ways to extend the implementation of bar coding throughout the plant.
- Study, analyze, and evaluate infrastructure requirements for better tracking and management of the material handling equipment fleet in the plant facility.

APPROACH

Continuous time studies, elemental time studies, static simulation model developed using Flow Path Calculator™; dynamic simulation model developed using Witness™



SOLUTION

- Headcount reallocations, even exceeding the initial twenty-two specified as a goal, were identified.
- Simulation models provided an analytical tool for quick analysis of material handling resources required by changing production conditions in the plant from both short-term and long-term changes to the production schedule.
- Bar Code and ID System Analysis provided full alternative, decoupled solutions that could be pursued in sequence or in parallel.

BENEFIT

- Headcount reductions resulted in an annual savings of \$4.3 Million.
- Bar Code and ID systems recommendations totaled \$1.3 Million in potential savings.