Genie Industries: Improving the Mini Paint Line

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PROBLEM BACKGROUND

Genie, a subdivision of the Terex Corporation, is a manufacturing facility located in Redmond, Washington that produces various lifts, booms, elevating platforms, and cranes. The company faces several constraints to its current system that require a new layout design.

The challenges faced with current system are the following:
1. Capacity at 50 units per shift is lower than the expected 60 units per shift.
2. Efficiency of inputs to assembly is lower than expected.
3. Available square footage is less than what Genie plans to move the mini line to.
4. Travel distance of carts is higher than expected.
5. Receptive from weld to final product is lower than expected.

Two alternaatives were explored:
- Alternative 1: Using just the conveyor system.
- Alternative 2: Using both conveyor and automated paint systems.

DESIGN OF NEW LAYOUT

In order to develop an alternative layout, we modeled our current demand using simulation software. The current system has four subassemblies: chassis, extension, platform, and links. The subassemblies are painted either grey or blue depending on the part. The chassis, extension, and platform are painted blue in the 'blue paint system', while the links are painted grey in the 'grey paint system'.

COST BENEFIT ANALYSIS

The analysis summarizes the cost of developing our optimum layout alternatives. It includes one year of labor costs just the conveyor and one year of labor costs just the auto paint.

Benefits of each alternative:
- Alternative 1 with Just the conveyor
  - Linearity: 18
  - Footprint: 5751 Sq. Ft.
  - Distance: 565 Ft.
- Alternative 2 with Just the auto paint
  - Linearity: 531
  - Footprint: 5312 Sq. Ft.
  - Distance: 531 Ft.

The most cost efficient design is Alternative 1, which involves a conveyor system and an automated paint system. This design results in the most significant increase in benefits.