Genie Industries is a manufacturer of construction lifts, boom platforms, and more. They are a subsidiary of Terex Corporation, and are located in Redmond, Washington.

Genie recently moved the production of the Genie Runabout, a low-weight, high-efficiency lift, to a new location. The current assembly line process is split into five main assembly stations: M0 – M4. There are various subassemblies feeding into these stations.

Improvement opportunities are the 4Ms:
1. Methods
2. Machines
3. Manpower
4. Materials

Goals: Identify a problem within the line that can be improved, formulate a solution, and plan a future implementation of the chosen solution.

Problem Identification
1. Line Understanding: Getting to know the basics of the line.
2. Line Analysis: Quantitative and qualitative analysis of the line:
   - Cycle times
   - FMEA
2. Spaghetti diagrams
3. Team Member input

3. M3 Scope Narrowing: Allows for a more detailed analysis in a troublesome area. M3 chosen due to:
   - Complex, high variation processes
   - Unbalanced cycle times
   - Inconsistent standard work processes

4. Decal Process Problem: In M3, decals are collected and applied onto the sides and front of the GR Unit. Inefficiencies in this process were found in:
   - Time spent collecting decals
   - Time spent applying decals
   - Alignment of placed decals

Solution Goal: To reduce the cycle time of the decal application and placement process, and to increase the alignment quality of the decals.

Solution Identification

Team Member Input: Team Members are the experts of their line.

Similar Projects & Processes: The MINI line nearby uses a drop-down frame to hold decals.

Goals for Solution:
1. Consolidation of the gathering and application steps
2. Flexibility of placement location
3. Poka-yokes to ensure alignment and error detection
4. Decal location proximity

Brainstorming

<table>
<thead>
<tr>
<th>M3 Decal Solutions</th>
<th>Method</th>
<th>Cost</th>
<th>Effectiveness</th>
<th>Work Required</th>
<th>Feasibility</th>
<th>Improvement Areas</th>
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<tbody>
<tr>
<td>Decal location proximity</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Time to apply decals</td>
<td></td>
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<tr>
<td>Alignment of placed decals</td>
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<td>Low</td>
<td>Low</td>
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<td>Time to apply decals</td>
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</tbody>
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Solution Decision
- Drop-down frame
- Decal check board
- Cycle time reduction goal of 30%

Solution Details

Decal Placement Movement: M3 does not have the overhead space for a drop-down frame. Instead, the decal process will move to M0. Standard work will be shifted around to ensure level-loading and to stay within takt time.

Design of Dropdown Frame
1. Decal Holders
   - Carries enough decals to prevent restocking multiple times a day
2. Magnet Attachments
   - Poka-yokes the placement of the frame on top of the GR unit
3. Check Board
   - Attached to the inside of the frame
   - Holds one decal to ensure poka-yoke is used

Implementation Plan

Tasks To Be Done
- Standard work updates
- Design of tool balancer and frame support
- Redesign of M0 overhead
- Plastic prototype and iteration of design
- Decal restocking procedure
- Decal bin movement

Steps to Implement
1. Standard work change implementation
2. Drop-down frame installation
3. Decal restocking procedure update
4. Decal bin movement

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