Genie Industries: GR Line Decal Placement Optimization

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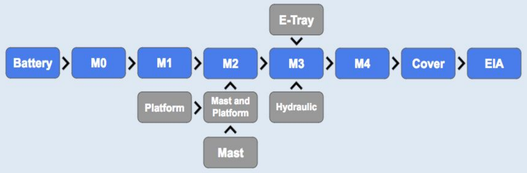
Background

Genie Industries is a manufacturer of construction lifts, booms, 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

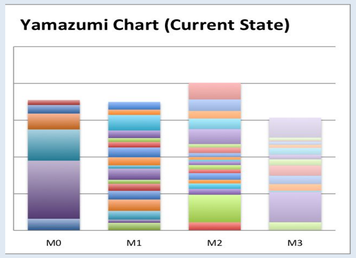
Goals: Identify a problem within line that can be improved, formulate a solution, and plan a future implementation of the chosen solution.

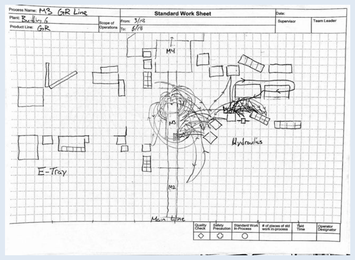
Problem Identification

1. Line Understanding: Getting to know the basics of the line.

2. Line Analysis: Quantitative and qualitative analysis of the line:

1. Cycle times
2. Spaghetti diagrams
3. FMEA
4. Team Member input





3. M3 Scope Narrowing: Allows for a more detailed analysis in a troublesome area. M3 chosen due to:

1. Complex, high variation processes
2. Unbalanced cycle times
3. Inconsistent standard work procedures

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:

1. Time spent collecting decals
2. Time spent applying decals
3. 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

M3 Decal Solutions					
Idea	Cost	Effectiveness	Work Required	Feasibility	Improvement Areas
Move earlier, fabricate suspended frame that has all decals	Med	Med	High	Med	Time to apply decals
Apply frame onto sides, openings for specific decals	Med	High	Med	Low	Time to apply decals Alignment of decals
Clear weld glass drop-down visuals	Low	Med	Med	High	Time to apply decals
Update lights for decal selection	Low	Low	Low	High	Time to gather decals
Assemble full side decals for each unit type	Med	Med	Med	Low	Time to gather decals
Paint where each decal goes	Low	Med	Med	Low	Time to apply decals Alignment of decals
Rearrange decal trays to have full set of decals for each unit type	Low	Low	Med	High	Time to gather decals

Solution Decision

- Drop-down frame
- Decal check board
- Cycle time reduction goal of 30%

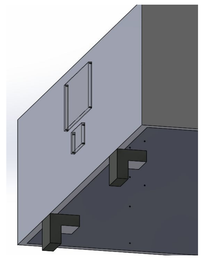
Solution Details

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

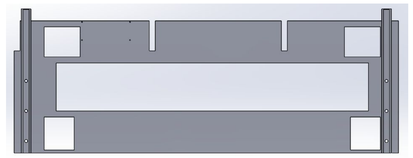


2. Magnet Attachments

- Poka-yokes the placement of the frame on top of the GR unit

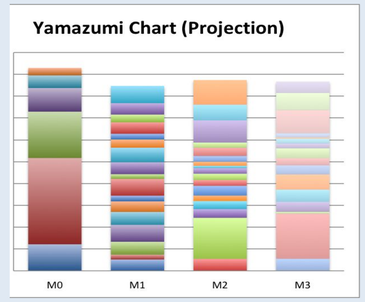
3. Check board

- Attached to the inside of the frame
- Holds one decal to ensure poka-yoke is used



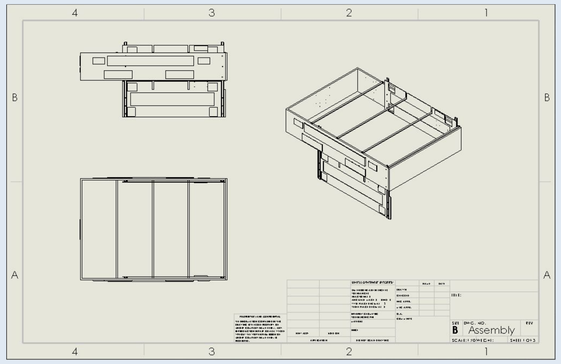
Deliverables

1. Standard Work Changes: Updates to Genie standard work forms.



2. Cardboard Prototype

3. Solidworks Model



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

Acknowledgements

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