Lean Transformation
GSM Motor Cell
Team: Emily Muldowney, Drake Warren, Advay Sharma, Paavan Patel

BACKGROUND

Inmotion US manufactures electric motors and controls, for the vehicle, material handling, and construction industries. This project focuses on one of the five electric motor lines, the General Starter Motor, GSM.

Problem

Currently, the GSM line suffers from high waste, excessive Work In Progress, non-standardized workspaces, and high clutter. These factors will prevent output from expanding to meet an estimated future demand of at least 7,800 units per year by 2027.

Objectives

1.) Increase 5S Score
   - Current: 1.4 / 5
   - Goal: 3.4 / 5

2.) Create Plan to Increase Capacity
   - Current: 1,765 motors per year
   - Goal: 7,800 motors per year by 2027

3.) Facilitate Sustainment
   - Create a package of resources to enable sustainment of solutions for at least 6 months

RESULTS AND IMPACT

Scored by manufacturing engineers after 5S changes. New score 3.0/5.

5S Score Increased by: 32%

Capacity Increase: 4.5X

Distance saved per year
Reduced Walking: 23 miles/year

Additional Sales Enabled: $7.6m

Key Deliverables

1. 5S Changes
   - Create shadow boards
   - Implement new visual signage
   - Perform sort audits with operators

2. Capacity
   - Excel simulation model
   - Rebalance line based on demand
   - New layouts
   - Simio Simulation

3. Sustain
   - Updated process op sheets to implement 5S cleaning habits
   - Created new 5S control document for the plant

Results and Impact

5S Score

Increased by: 32%

Capacity increase from proposal

Projected sales enabled by capacity expansion
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**Objectives**

1. **Increase 5S Score**
   - Current: 1.4 / 5
   - Goal: 3.4 / 5

2. **Create Plan to Increase Capacity**
   - Current: 1,000 motors per year
   - Goal: 7,800 motors per year by 2027

3. **Facilitate Sustainment**
   - Create a package of resources to enable sustainment of solutions for at least 6 months

**Solutions**

2023
- Rebalanced workload between existing operators
- Move workstations to streamline flow

2027
- Proposed 6 additional operators
- Reconstruct line

**Results and Impact**

- **5S Score:**
  - Current: 3.0
  - Goal: 3.4

- **Increase Line Capacity by:**
  - 80% from rotor outsourcing and material staging
  - Projected sales that would be lost if demand not met. Saving include costs of new operators and equipment

- **Reduce Operator Walking by:**
  - 70'

- **Additional Sales Enabled:**
  - $7.6m

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**PROJECT APPROACH**

Define

Measure

Analyze

Improve

Control