Assembly Tool Storage and Management System

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Degelman ENGINEERED TOUGH

Background

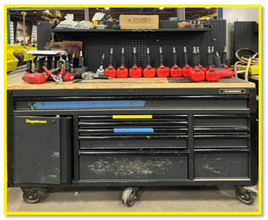
- Degelman Industries manufactures heavy, farm equipment.
- Assembly Department's 70+ employees challenged with misplaced or lost tools and non-functional tool storage.
- Poor tool management system adversely affects quality, productivity and profits (cost of tool replacement).

Objectives

To design a tool storage and management system for

- Storing tools properly
- Reducing tool loss
- Enhancing productivity
- Improving accountability
- Increasing profits

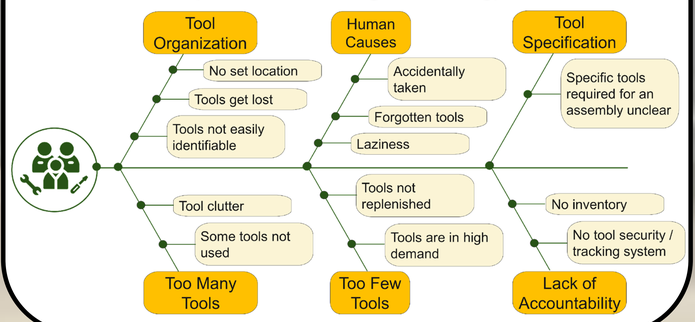
Current Storage State



- Broken tool cabinets
- Underdeveloped controls
- Unorganized, unmarked tools

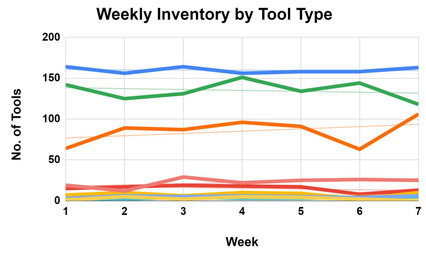
Root Cause Analysis

(on WHY tools go missing)



Inventory Analysis

- What tools often go missing



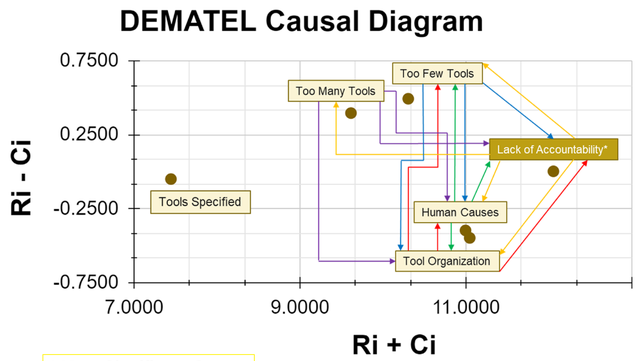
Legend	Tool Type	Mean	Variance
	Wrench	159.86	13.48
	Torque Wrench	15.29	14.24
	Ratchet	7.71	8.90
	Socket	135.00	132.00
	Impacts	85.14	257.14
	Die Grinder	3.43	0.95
	Drill Gun	5.00	1.33
	Pry Bar	22.57	31.62
	Extension	2.71	3.90

Multi-Criterion Decision Analysis

- Ranking of Factors Causing Current Tool State
  - — Analytical Hierarchical Process

Factors	Rank
Tool Organization	1
Tool Specification	2
Human Causes	3
Lack of Accountability	4
Too Few Tools	5
Too Many Tools	6

- Relation Among Factors
  - — Decision-Making Trial and Evaluation Laboratory



*** Most Significant Cause**
Ri – Sum of Rows
Ci – Sum of Columns

Recommended Solutions

New Tool Cabinets + Bluetooth Low Energy (BLE) Trackers + Implementing 5/6S + Tool Inventory & Status Sheet + Colour-Coded Tools

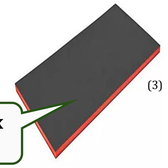

(1)

SNAP-ON© - 53" 11-Drawer Double-Bank Heritage Series Roll CAB

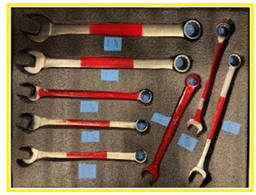
Milwaukee © One Key Bluetooth Tracking Tag

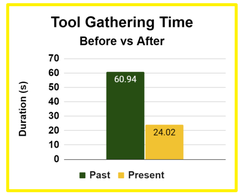

(2)

ULINE © 5S Toolbox Foam Inserts


(3)

Assessment





- 5/6S Implementation + Colour-Coded Tools: Organized tools using foam inserts
  One drawer per shift
- Average Tool Gathering Time: Reduced by 86.91%
- BLE Tracker Tool Location Simulation: Tools Found in ~3 minutes (43% reduction)

Conclusions/Recommendations

- Replace impacts with Milwaukee built-in tracking impacts
- Upgrade to industrial-grade tool cabinets
- Utilize the tool inventory and status sheet for shift accountability
- Implement the developed 5/6S SOPs

Acknowledgements

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- Rolito Ayudan – Weekend Shift Lead Hand
- Degelman Assembly Department Employees

References

Images from :
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