

WePackItAll

WePackItAll is a contract packaging company specializing in providing primary and secondary packaging to clients in the US and across the world. WePackItAll has experienced exponential growth over the COVID-19 pandemic, and in the summer of 2021 WPIA's management invited the HMC Riggs team to work on a 10-week transformation of its stick pack cartoning packaging operations.

The Foothill Facility Stick Pack Cartoning Lines

Current Customer Demand: ~6,000 cartons of LIV per line per shift

Key Products (% of total):

10 Count (37%), 8 Count (6%), 6 Count (54%), 3 Count (3%)

Current Labor Costs:

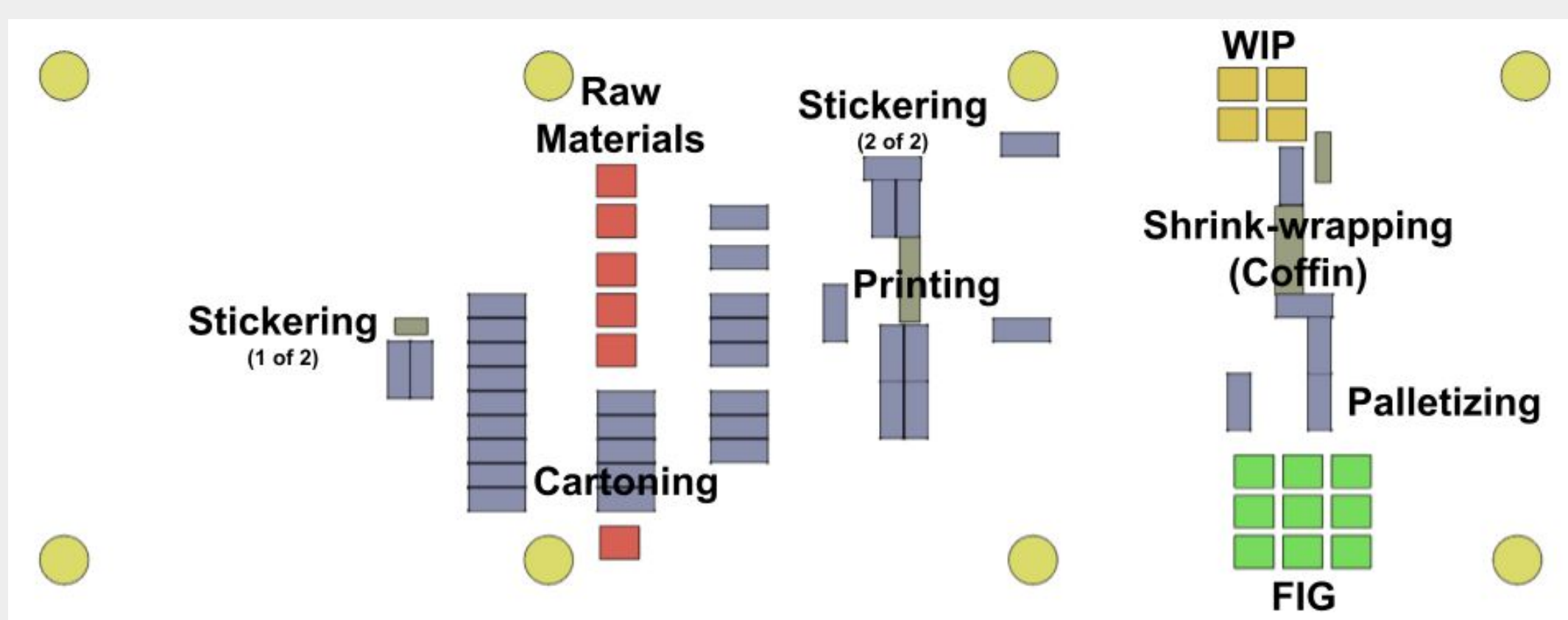
\$25/hour x 18 People/Line x 8 hours/Shift x 2 Shifts/Day x 2 Lines

= \$3.7 Million Dollars/year

Work-in-process (WIP) Inventory: 75,000 sticks

Sources of Waste

Layout



The current layout:

- Is a disorganized grouping of tables, material pallets, and machinery
- Changes on a daily basis with no distinct flow of materials

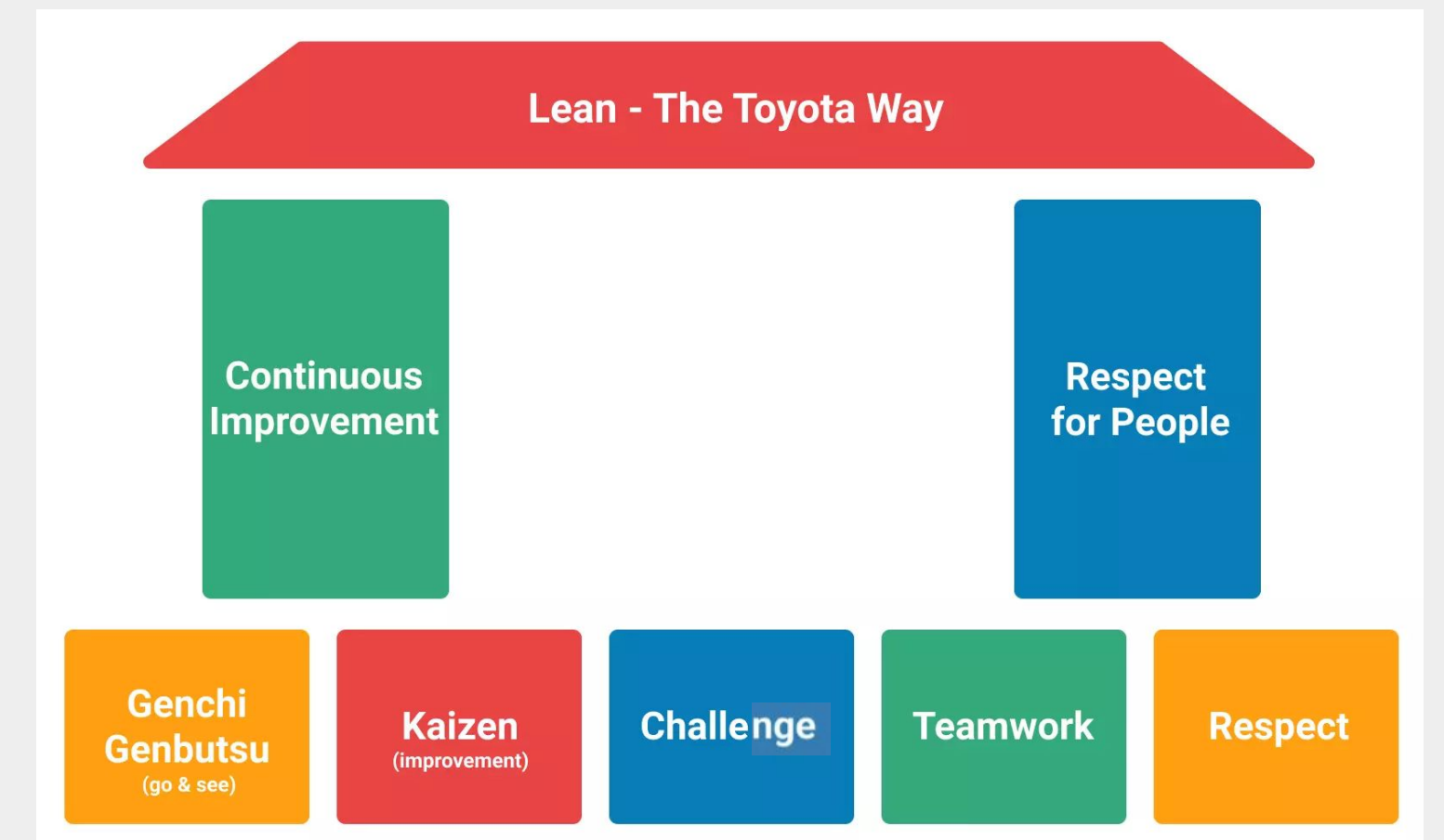
High Inventory Levels



The current production technique:

- Creates uneven flow of materials by alternating between building up and sprinting through inventory
- Hides quality issues and creates unnecessary rework when there are lot changes

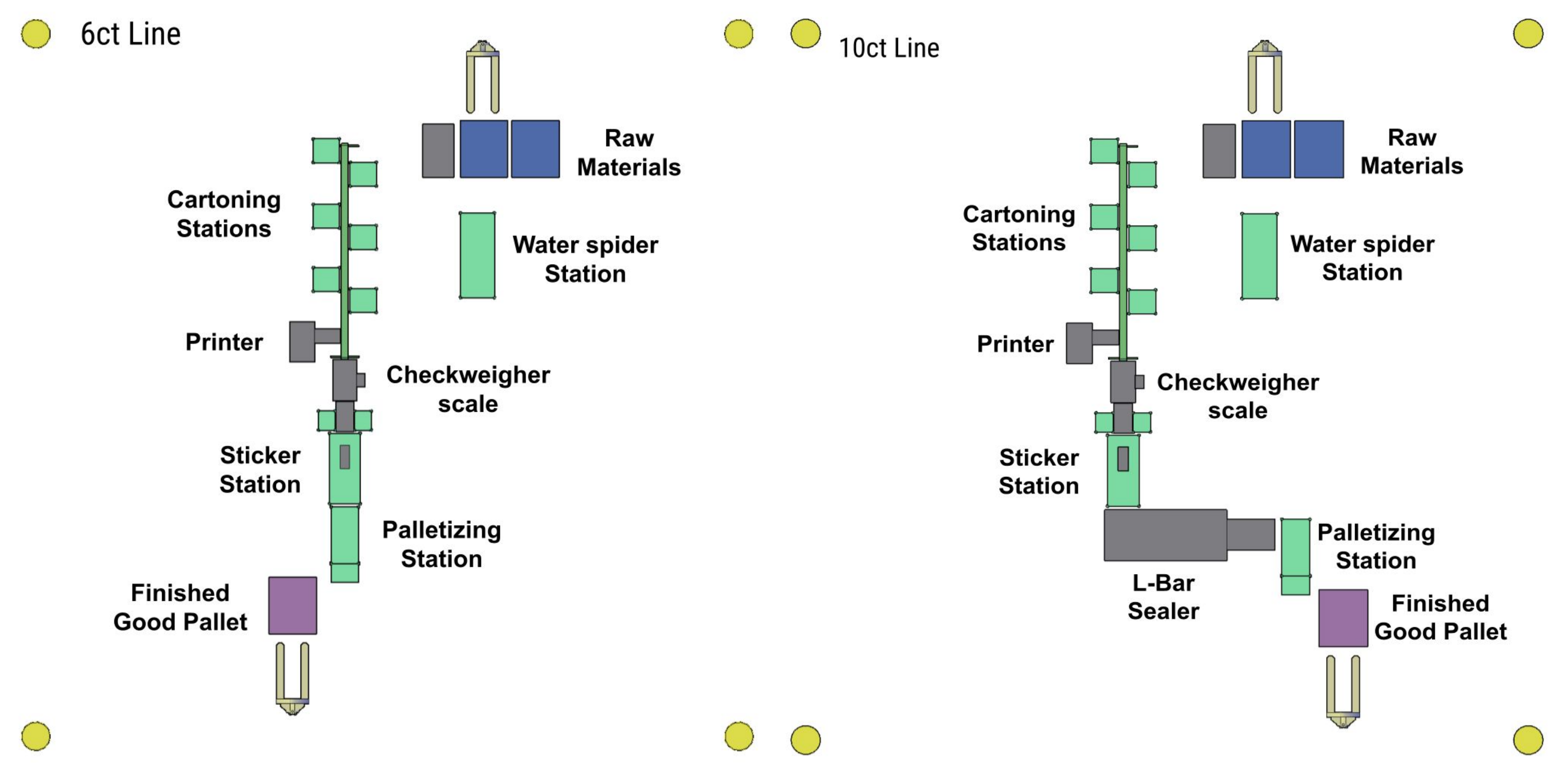
Management



- Poor Communication
 - Non-responsive Aisle Support
 - Disorganized Lot Change
- Lack of proper equipment
- Firefighting solutions for equipment breakdowns

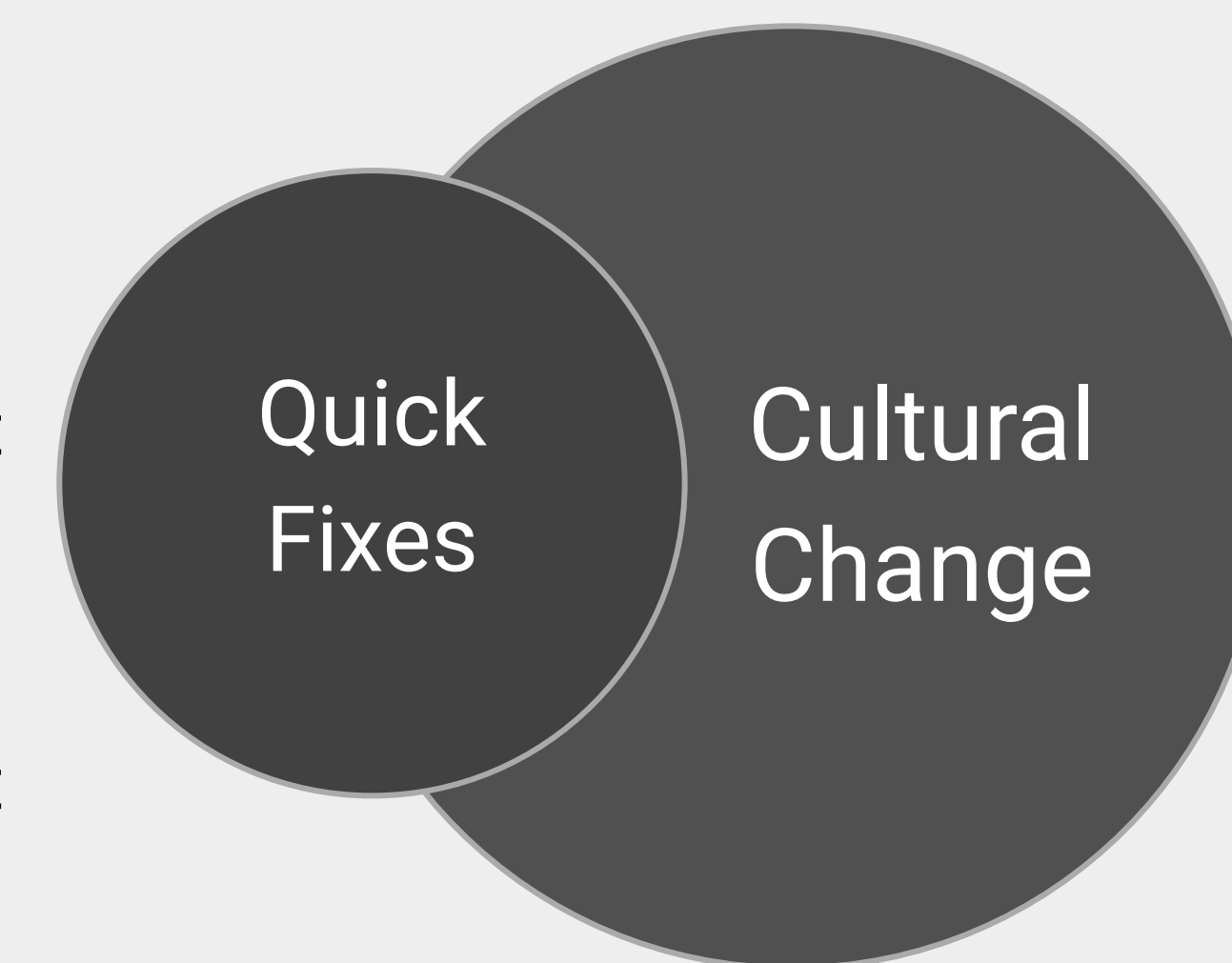
Improvements

Floor plan Layout



Management

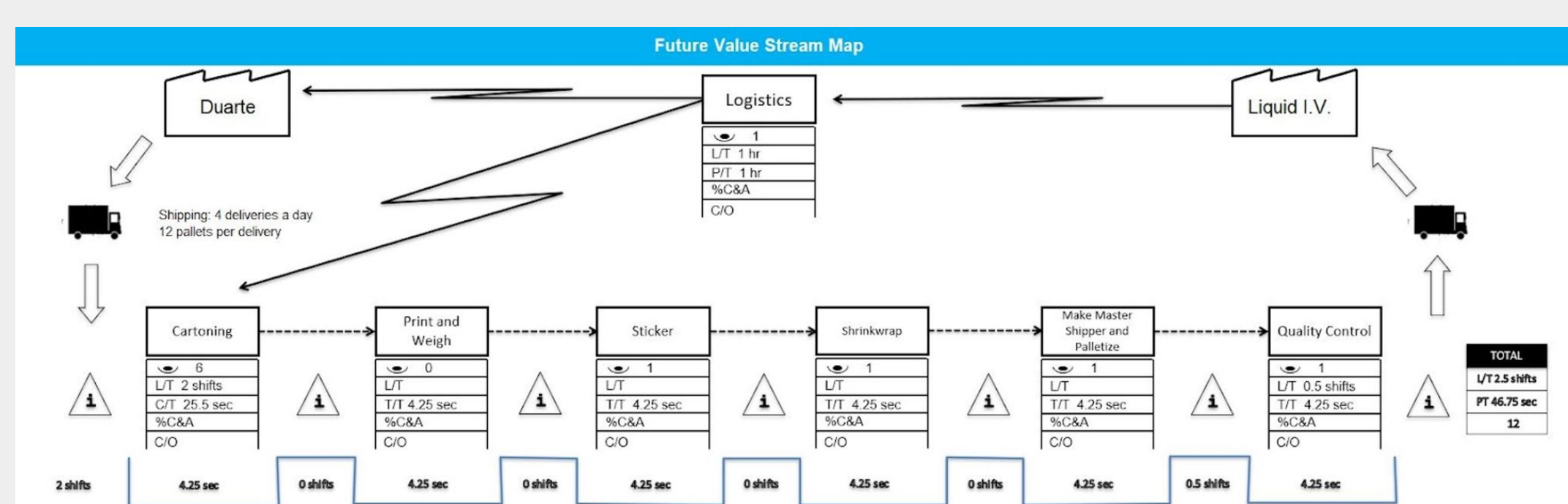
- Appointed Line Lead
- New Line Equipment
- Training Documentation
- Visual Management



- Responsiveness of Departments
- Empowering Operators
- Preventative Maintenance
- Communication
- Servant Leadership

Redesigned Assembly Line

Single-piece Flow



Benefits of Single-Piece Flow

- Reduced work-in-process
- Reduced rework
- Increased quality
- Improved working conditions

Upgraded Workstations

Initial

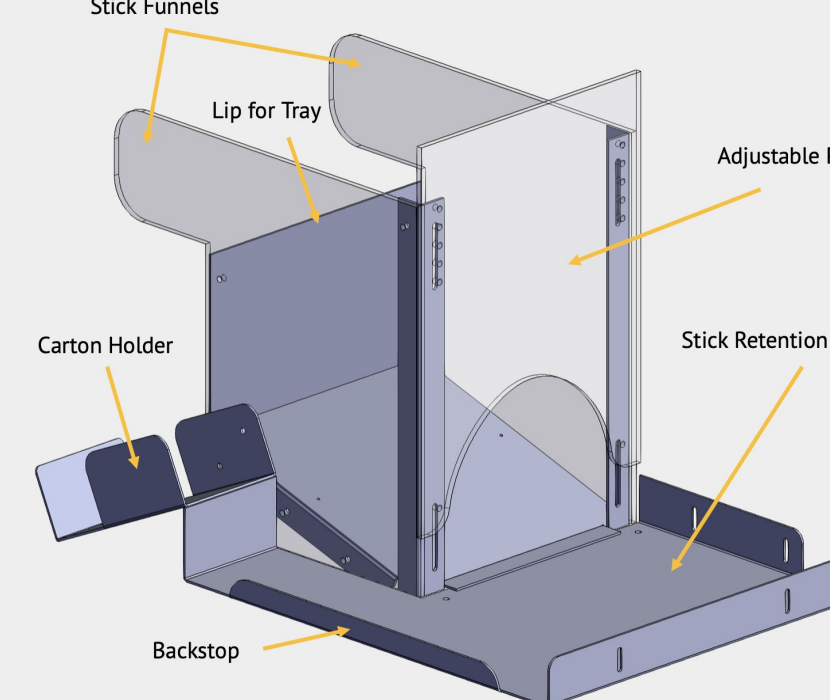


Final



Benefits of New Hopper

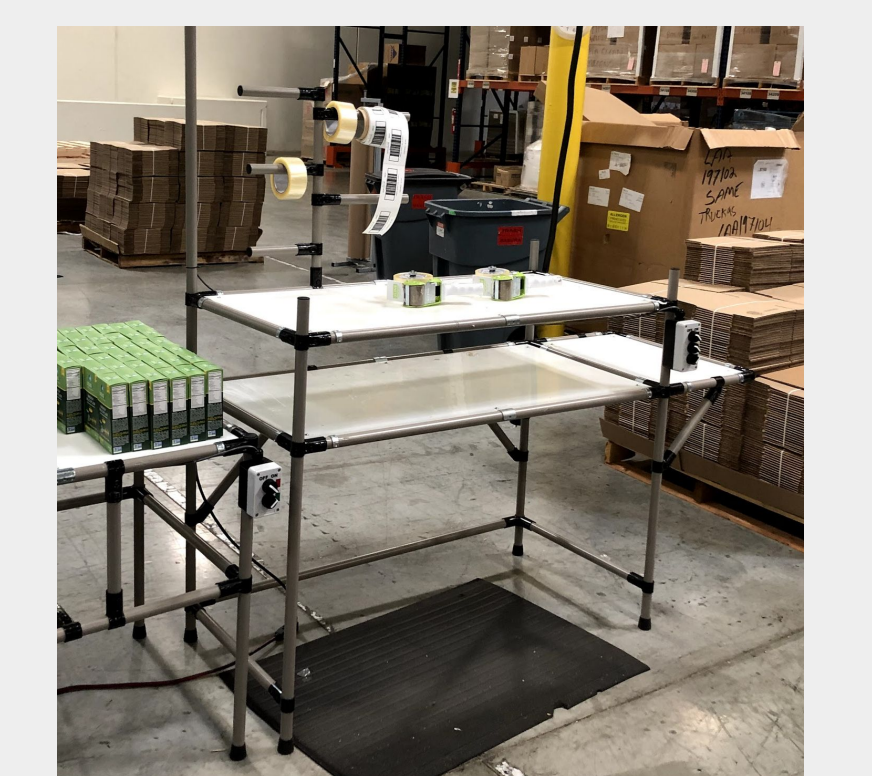
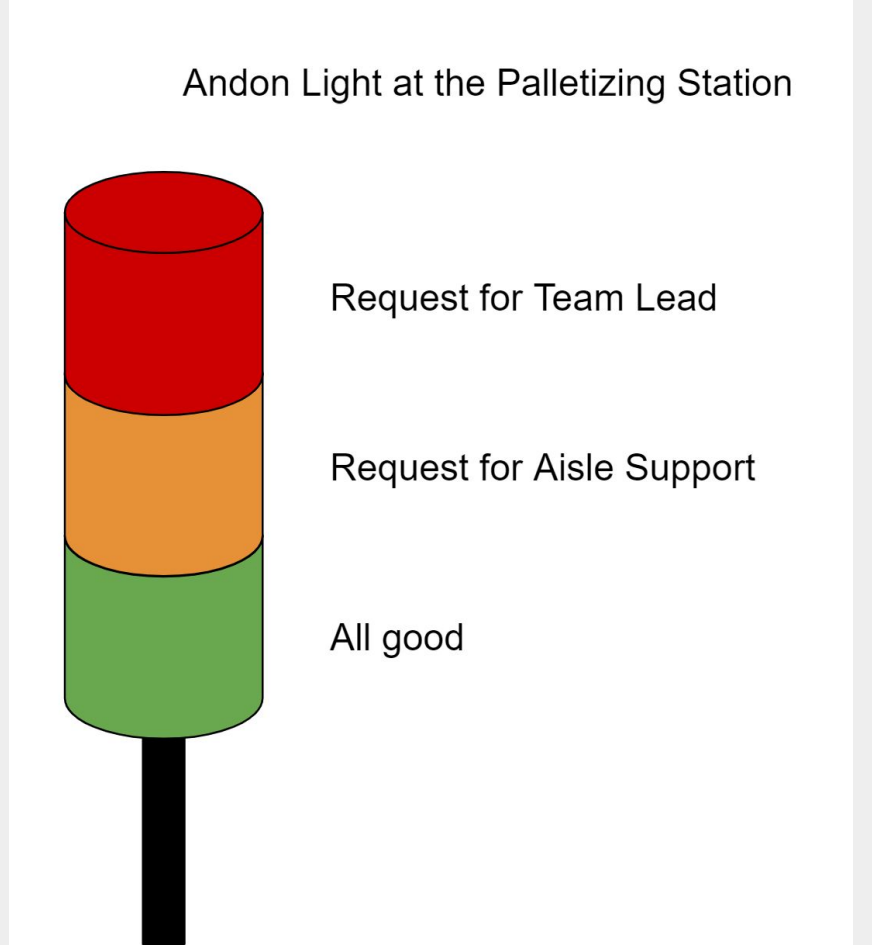
- Reduced clutter
- Inventory within arm's reach
- Water spider delivery of sticks
- Increased operator comfort



Equipment

Benefits of New Equipment

- Andon Lights
 - Promotes communication between the operators, the Team Lead, and aisle support
 - Empowers operators
- Flexpipe workstations
 - Ergonomic design
 - Provides only the necessary space
- Sticker Machine
 - Faster and easier than by hand
 - No batching
- Checkweigher scale
 - Obvious when quality issues occur
 - No searching for source of error
 - Immediate feedback and correction
- L-Bar Sealer
 - Minimal setup time
 - Easy to learn



Source: <https://tach-it.com/product/label-applier-machine-6500/>

Acknowledgements

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- Natan Bershtel, Jack Bershtel, Vanessa Jimenez, and WePackItAll for the opportunity to apply lean manufacturing concepts to their carton pack out lines
- Greg Pagani for his invaluable contributions to the team
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- Troy Saunders, Rob Perhamus, and the Harvey Mudd College summer machine shop team for their help machining critical components of the implemented designs
- Professor Gokli for his continued support and guidance throughout the project

Results

	Operators Saved	Labor Cost Saved/shift/year	Floorspace Reduction	Inventory Reduction (sticks)	Total Projected Annual Savings
10 count	4.60	\$230,000	4700 ft ²	25,000	\$1.2M
6 count	3.96	\$198,000	4900 ft ²	7,500	