IMPLEMENTATION STRATEGIES *for Horizontal Material Handling*

Althon A







TABLE OF CONTENTS

Introduction	. 1
Designing Efficient Material Handling and Movement Processes	. 2
Integrating Material Movement with Information Systems	. 3
Training a Modern Material Flow Workforce	.4
Measuring HMH Implementation	. 5
Conclusion	. 6

Executive Summary

Despite record-high output, new demand continues to stretch the resources and capabilities of manufacturing and warehouse facilities. To keep up, facility managers are investing in modern processes and technology, such as horizontal material handling, to improve productivity and speed responsiveness.

Implementing these new material movement strategies requires careful planning to enhance, not disrupt, operations. Organizations can maximize productivity and meet aggressive growth goals by utilizing established implementation strategies that account for planning, design, system integration, and workforce training. By combining these strategies with continual performance measurement, organizations can meet today's challenges—and position themselves for future growth and performance.



Introduction

Laying a Lean Foundation for Operational Growth

The future outlook for the manufacturing industry looks bright. According to one executive survey, more than half of manufacturing leaders surveyed expect their revenue to grow by 5% or more annually over the next five years.¹

Yet, critical challenges—including rising material costs, strain on manufacturing capacity and increasing labor costs threaten to derail these encouraging projections. To continue to meet revenue targets, facility managers are increasingly adopting lean manufacturing techniques to overcome challenges and achieve sustained growth in both productivity and efficiency.

While each manufacturer may define it slightly differently, the concept of lean manufacturing can be distilled down to one, simple goal: to eliminate waste from the manufacturing process. In manufacturing facilities, waste can take many forms—from unnecessary transportation to extended wait times between deliveries. Yet, each of these wastes reflects the same root cause: inefficient transport tying up labor and equipment, while under-utilizing both resources.

In response, leading organizations have begun to implement modern horizontal material handling practices to maximize their operational potential.



Identifying Facility Waste Due to their limited load capacity, forklifts must make frequent trips, which can lead to route congestion and safety issues.

WHAT'S HORIZONTAL MATERIAL HANDLING?

For years, facility managers have failed to differentiate between their vertical and horizonal material handling and movement using forklifts for both stocking and transporting goods in the warehouse. Horizontal material handling, which emphasizes the use of right-sized, task-matched tow tractors and industrial cart systems to transport materials and goods between cells, allows manufacturers and warehouse managers to reimagine their operational footprints—reducing equipment and labor costs.

While the details of successful horizontal material handling implementations tend to be dictated by the unique environment, objectives and existing workflows in a facility, proper implementation can be broken down into four basic steps:

- **1** Plan and design
- (2) Integrate information systems
- **3** Train workforce

4 Measure performance (including continuous improvement)

This whitepaper will explore each of these steps—including the systems, equipment and strategies associated with each one—to help manufacturers extend the advantages of lean manufacturing to material movement processes.

1. IndustryWeek Special Research Report: https://www.nist.gov/system/files/documents/2016/11/16/iw_kronos_research_report_2016.pdf

Designing Efficient Material Handling and Movement Processes

Horizontal material handling allows operation managers to transform the way vehicles move throughout their facilities reimagining outdated workflows and unlocking each vehicle's full potential in service of maximum system efficiency.

Layering in an Agile manufacturing methodology on top of the implementation process can further enhance system productivity, reliability and quality. Agile focuses on delivering increased results and customer satisfaction through iterative process changes. It advocates for facilities to deploy smaller modular teams and components that can be adjusted and reorganized based on real-time demand and prioritization.

In material movement, Agile can help isolate specific incremental improvements that facility managers can gain by reimagining vehicle fleets and workflow.

Agile in Action: Optimizing Vehicles & Delivery Routes

Once an organization differentiates between vertical and horizontal material handling and movement, facilities can adopt strategies that capitalize on the efficiency advantages of tow tractors and industrial carts—while maximizing the value and productivity of forklifts.

Tow tractors and industrial carts allow manufacturers to introduce more efficient decoupled delivery routes. These industrial cart systems target the horizontal movement of materials that greatly improve productivity rates. Other transport vehicles, such as forklifts, have a small carrying capacity and require frequent loading and unloading to occur; industrial cart systems, however, offer flexibility to match fluctuating material movement demands—while reducing the need for redundant trips. Industrial carts can also deliver to multiple line stations in a single trip, which streamlines workflow traffic in a single direction throughout the facility.

Improved Load Capacity

Tug systems allow HMH workflows to increase their output-delivering up to 4x more pallets in a single trip.

Reduced Congestion

By increasing the load capacity per trip, tug systems can significantly reduce the need for frequent, redundant trips along main pathways.



Integrating Material Movement with Information Systems

The same technology trends that are changing the way many industries operate have also begun to take hold in critical manufacturing processes. Throughout the facility, big data and analytics are being used to collect valuable insights that can support decision making and increase efficiency. Meanwhile, the Internet of Things promises to introduce machine-to-machine communication that improves vehicle utilization, automation and efficiency across multiple manufacturing workflows.

"[The] companies that survive will be those that leverage the power of material handling technology, while companies that don't take advantage of such systems will be outperformed by their competitors." -EVP of a leading material handling logistics firm²

To fully maximize the lean manufacturing benefits of implementing a horizontal material movement strategy, facility managers need to ensure new vehicles and workflows are optimized to interact with existing information management systems. For example, Kanban cards or pull signals, which help drive more efficient just-in-time material movement and replenishment throughout the facility, may need to be recalibrated to account for the benefits of decoupled industrial cart routes versus coupled delivery routes.

Facility managers can start the recalibration process by establishing standard cycle times, drawn from experience, for the new decoupled delivery routes. This will include the time allotted for tugger drive time, getting on and off the vehicle, removing a full container, putting it on a rack and returning with an empty container. Using these time standards for every part number in a cell and every cell on a route, facility managers can prepare the new material movement rollout strategy to account for the differences between the old and new workflows.

Manufacturing and warehouse facilities have a few options when it comes to the rollout of new material movement vehicles and workflows. While a phased rollout—consisting of gradual implementation in a few locations at a time—might be the most common, it isn't the best choice for every facility. Alternative options include big bang adoption, parallel adoption and pilot conversion. Each rollout plan provides different advantages depending on the magnitude of the changes to existing vehicles, workflows and information protocols. For instance, new greenfield projects and facilities—without prior workflow constraints—may have more flexibility when deciding how to rollout the new material movement process; while brownfield facility redesigns will need to account for existing operational and space limitations.

CHOOSE THE RIGHT ROLLOUT PLAN³



Phased rollout

Migration to the new system takes place incrementally, adding new modules over time until the rollout is complete.



Big bang adoption

Complete and simultaneous implementation of the new system takes place across the entire operation.



Parallel adoption

Implementation occurs alongside the existing system until the new system is complete and operating successfully.



Pilot conversion

Rollout to a small group of users for evaluation and testing before implementation to the entire operation.

Test, Test and Test Again

During rollout, testing and validation will help ensure the new material handling system is meeting performance standards. The length of time required to fully debug a new program is not uniform and may require anywhere from a week to multiple weeks to completely streamline. In addition to monitoring performance, engineers should monitor adherence to standard work protocols and collect feedback from employees.

2. https://www.inboundlogistics.com/cms/article/material-handling-technology-beyond-the-nuts-and-bolts/

3. https://searchitoperations.techtarget.com/definition/phased-rollout

Training a Modern Material Flow Workforce

Before introducing a new material movement system and a fleet of tow tractor and industrial carts, it's important to gain buy-in from each of the affected stakeholder groups. Leveraging cross-functional planning and implementation teams that include representatives from production control, industrial engineering, operations, shipping, quality, hourly employees and safety representatives can help ensure the new system serves the multifaceted needs of the entire operation.



Emphasize Communication to Increase Buy-In and Engagement

Many organizations become so focused on deployment and conversion schedules that they fail to consider how they can help employees adopt new material movement vehicles and workflows. This is one of the biggest causes of deployment errors, morale issues—and even project failure.

"One of the hardest obstacles to implementing new material systems is helping operators ... adjust to a new method of working." -Industrial Engineering Manager⁴

To increase adoption, change management teams must clearly and concisely lay out the ways employees can benefit from adopting new systems. In horizontal material handling, for example, new system training should emphasize the operational and safety gains of tow tractor and cart adoption in the warehouse and across manufacturing production lines.

THE CASE FOR HMH ADOPTION⁵

\checkmark	Eliminate safety risks created by using forklifts for HMH.
✓	Simplify traffic patterns – with fewer vehicles on HMH routes.
S	Achieve 4x greater trip efficiency with increased load volumes.
\checkmark	Reduce material delivery time by up to 50%

Additionally, manufacturers and warehouse managers will need to consider the questions and concerns their employees have during the implementation process.

Some key questions to prepare for might include:

- What safety measures will be implemented with the new material flow processes?
- Does the new fleet and system introduce potential hazards for workers and workflows?
- · How and when will tow tractor training and rollout occur?

Training in the Modern Warehouse

Creating a modern warehouse requires careful attention to worker training across workflows. Unlike forklifts, industrial cart systems do not require annual training, which reduces costs and labor limitations. Here are some training locations that can generate the biggest impact on new horizontal material handling workflows.

- · Tow tractor driver training and line delivery
- Cell operator training on decoupled trailers, loading/unloading, etc.
- · Material removal training for the new vehicles and system
- Kitting and sequencing training

In addition, accounting for employee concerns and preferences throughout the implementation process will help make them feel valued, trusted and respected. It can also increase security and self-confidence at a time when employees tend to feel insecure.

^{4.} https://www.lean.org/common/display/?o=788

^{5.} https://commercial.polaris.com/en-us/material-handling/#increased-labor-efficiency

Measuring HMH Implementation

Once a horizontal material handling strategy has been implemented, it's important to measure its performance against critical system KPIs. Over time, reengineering manufacturing facilities to maximize horizontal workflows and industrial cart systems has the potential to deliver significant labor, vehicle and safety savings. However, reaching peak performance requires an iterative approach that leverages performance measurement to identify opportunities for continuous improvement.

Here are four steps organizations can take to integrate continuous improvement strategies into their vehicles and material movement system.

DETERMINE WHAT TO BENCHMARK

Depending on the objectives that were identified during the planning stage, useful benchmarks might include vehicle and space utilization, output volume, labor usage and engagement, improved safety, sustainability measures, total cost of vehicle operations—and in many cases, all of these factors.

These benchmarks can help demonstrate the ROI of new industrial cart systems compared to older, more traditional horizontal material handling approaches.

DEFINE THE MEASURES

Every measure should serve a goal based on a desired level of future performance. To ensure that implementation and performance goals truly monitor and drive performance gains, it may help to build out these goals using the S.M.A.R.T. philosophy (Specific, Measurable, Achievable, Realistic and Timebound).

DEVELOP DATA COLLECTION METHODOLOGY

Identify how data will be collected to measure these goals. Here are some preliminary questions that can help an organization establish its data collection process⁶:

- How will it be calculated?
- What will performance reports look like?
- What is the reporting frequency?
- Who owns the collection of data?



Based on these factors—and the performance goals to be measured—a standard work document can be created to help operators collect relevant data. This work document can also provide a place for drivers to report feedback regarding the new system's operation.

COLLECT DATA AND IDENTIFY OPPORTUNITIES

As data is collected, it's important to maintain consistent input and reporting processes. Only standardized data practices can reveal performance trends that can be used to inform future opportunities for improvement. It's also critical that metric reports get communicated to teams to understand impact, improvements, and future change management around implementations.

DON'T FORGET TO MEASURE THE IMPACT OF TRAINING!

People-centered metrics such as engagement scores, surveys and employee-management feedback sessions can help identify training practices that serve the unique needs and learning styles of material movement teams. When employees are properly trained and engaged, it becomes easier to adopt and accurately assess the productivity gains achieved through HMH implementation.

Taylor-Dunn Delivers Horizontal Material Handling Solutions for the Modern Facility

Implementing new material movement strategies requires careful planning to enhance—not disrupt—operations. For this reason, while many organizations recognize the potential benefits of a modern horizontal material handling solution, the potential for costly implementation headaches prevent them from prioritizing process improvement.

But doing nothing isn't a viable option either. Stagnant organizations run the risk of falling further behind their competitors, as leaders in the manufacturing industry continue to capitalize on new opportunities in big data, automation and performance analytics.

Choosing a material movement partner with experience managing the implementation of industrial cart systems provides access to the critical resources and expertise that can help overcome implementation fears—and maximize system performance from the start. Over more than 75 years, Taylor-Dunn has helped hundreds of facilities introduce right-sized, task-matched industrial cart systems to their existing material flow process—infusing new labor utilization and productivity advantages to help each operation meet their efficiency goals.

Create a Closed-Loop Work Flow



Forklifts — Travel 10 Miles Daily Requires multiple trips and more workers



Tow Tractor — Travels 3 Miles Daily

- Minimizes trips and workers needed
- · Lowers costs and carbon emissions

Closed-Loop Tasks for Tow Tractors

- Drive loaded trailers to assembly line
- · Pick up empty pallets and trailers from assembly line
- Return to racking with empty carts to reload

See what efficient horizontal material handling can look like in your facility

763-847-8412

https://polaris.com/materialhandling



Schedule a **FREE** MATERIAL FLOW COST ANALYSIS to improve your material

handling strategy

7. https://www.nist.gov/system/files/documents/2016/11/16/iw_kronos_research_report_2016.pdf