LIFT by Flexware Innovation™

Use Case Scenario

Bringing Chaos to Clarify in Intralogistics

Automotive Manufacturer Struggles with Inefficient Materials Movement

Company Background

A mid-size Tier 2 automotive supplier produces door lock mechanisms for the automotive industry. The facility operates seven final Assembly lines that produce multiple finished product models/SKUs. Some of the required materials are produced internally by the Fabrication department and delivered just-in-time (JIT) to the assembly lines, while others are supplied by external 3rd party vendors and stored in the warehouse until needed. To address growing workforce retention issues and increasing demand, the company invested in a fleet of AMRs to deliver all required component materials to the final assembly lines in a JIT manner.

Challenges

Despite the investments in automation, the company experiences several issues that negatively impact productivity, lead times, and customer satisfaction:

Workflow Complexities

- Due to the difference in production schedules and cycle times between final assembly and fabrication, all internally produced materials must be buffered in a WIP Staging Buffer located near each assembly line.
- Each WIP Staging Buffer must hold and track multiple SKUs simultaneously to manage changeovers on the supported assembly line(s).
- The AMRs must execute both picks and drops within each dynamically changing WIP Staging Buffer area.
- The purchased AMR system cannot determine which locations to use for each mission since it does not manage the current state of inventory locations.

Missed Optimization Opportunities

- To fully automate the material flow process, the AMRs must transfer not only full containers from Fabrication to Assembly, but also empty containers from Assembly back to Fabrication. Both full and empty containers must go through the same WIP Staging Buffers to optimize limited floor space.
- For maximum efficiency, an assigned AMR should always complete a full cycle mission by delivering a full container to the WIP Staging Buffer and returning an empty container to the original Fabrication machine before starting a new mission. Due to the dynamic nature of the WIP Staging Buffers, the buffer pick and drop locations must be determined in real time at the start of each mission.
- The purchased AMR system does not support, out-of-the-box, the daisy-chaining of multiple sequential picks and drops from dynamic locations using the same AMR.

About LIFT™

LIFT by Flexware is a system-agnostic intralogistics middleware solution designed for manufacturing and warehousing organizations.

LIFT acts as the acceleration and orchestration software that connects and coordinates work between multiple AGVs and AMRs, various personnel, and disparate systems based on real-time information and activity. It unifies both autonomous and manual logistics operations, including forklifts, pallet jacks, and tuggers, into a single, integrated system.

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Disconnected Systems

- The company's MES, WMS, and AMRs operate in silos, making it difficult to synchronize production schedules (what material do I need now?) with inventory management (where is the material I need?) and material movement (to what location is the material being delivered?).

Frequent Downtime

- When issues occur with the complex workflow (ex. upon arrival, AMR determines that the target drop location is already occupied), the AMR stops moving and requires manual intervention to troubleshoot and reset. This leads to production stoppages and missed deadlines.

Lack of Real-Time Visibility / Alerting

- Operations personnel have limited insights into the real-time material flow, making it difficult to identify bottlenecks and areas for improvement.
- When faults or delays occur, support personnel are not notified in a timely manner nor provided with the necessary information to resolve the issue quickly.

How LIFT Addresses the Challenges

Centralized Orchestration: LIFT acts as middleware, seamlessly integrating the MES, WMS, and AMR systems. By connecting these systems, LIFT creates a unified platform that synchronizes production schedules, inventory management, and material movements.

Optimized Workflow: LIFT allows complex workflows to be configured quickly and simply through a modern UI. Decision logic and business rules can be configured with out-of-the-box tools, allowing users to build powerful, sophisticated workflows with limited training.

Real-Time Visibility / Alerting: LIFT provides live dashboards showing the exact state of all missions. It includes configurable alerts and notifications so the right personnel can be informed in all situations. As the intralogistics middleware for the overall solution, LIFT provides visibility into all solution components to identify and resolve issues quickly.

Scalability and Flexibility: As the manufacturer grows, LIFT can scale to manage additional equipment and handle more complex workflows, ensuring continued efficiency improvements. LIFT's powerful, simple-to-use interface allows incremental changes to be made and tested easily, without the need to engage third-party suppliers. The robust workflow version control feature ensures that all changes are tracked and adhere to the company's strict change-control policies.

Data-Driven Insights: LIFT logs every movement and interaction, providing actionable insights. The manufacturer can use this data to identify trends, optimize workflows, and schedule predictive maintenance for AGVs and other equipment.

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