Use of Automated Guided Vehicles (AGV) for Material Handling Applications

Brett Burbank
Iowa State University, bburbank@iastate.edu

Jacob Askam
Iowa State University, jdaskam@iastate.edu

Matt Thompson
Iowa State University, mttt@iastate.edu

Zach Woloszyk
Iowa State University, zachwo@iastate.edu

Michael Anderson
Iowa State University, mea1@iastate.edu

See next page for additional authors
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Use of Automated Guided Vehicles (AGV) for Material Handling Applications

Client: ORBIS Corporation, Monticello, IA

Problem Statement
- Conduct AGV (man-less forklift) research to understand the benefit versus the cost of implementing this technology with the intent to implement into warehouse
- The AGVs will travel from the stretch wrapper to the warehouse racking or truck staging area

Objectives
- Design an AGV system to move pallets throughout the facility
- Provide a quantitative Return on Investment (ROI) for the system
- Reduce the amount of man hours spent on material handling

Constraints
- Budget: Based on cost savings and ROI
- Timeline: Completed by 4/1/2020
- Requirements: Must label pallets being moved to warehouse
- Criteria to be met: Must be compliant with OSHA regulation ANSI B56

Scope
- Recommendation of an automated guided vehicle system that transports materials within the ORBIS warehouse with a return on investment of two years or less

Methods/Approach
- Multiple site visits with client and AGV companies
- Phone conference calls with AGV companies for solutions and price points
- Created a spaghetti diagram to show paths that AGV would take
- Created a ROI to compared competitors’ prices

Major Deliverables
- Annual savings per year in worker-hours
- Estimated cost
- Spaghetti diagram with distances
- All capital investment options identified with full costs over a 3-year period
- All pros and cons identified

Recommendations
- We recommend ORBIS to adopt Balyo’s automated guided vehicle technology
- Implement full AGV units in 2021

References
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Cost of manual versus robotic labor over a 5-year period. The intersection of the ‘manual’ and ‘robotic’ lines marks a 15.6 month return on investment

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