AGVs, AMRs, and AGCs...Understanding the Alphabet Soup of Mobile Automation

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Session Description

Automatic Guided Vehicles (AGVs), Autonomous Mobile Robots (AMRs), Automatic Guided Carts (AGCs)…there are a LOT of letters describing the current state of Mobile Automation. What’s even more confusing is what all these mobile automation machines can (and can’t) do. This presentation will help you understand and navigate through all the functionality of these solutions, where they overlap and what application are best for each. Most importantly, you’ll learn how each can help optimize your operation.

Key Takeaways

• Learn the differences between AGV, AGC, and AMR mobile automation solutions and where each is applicable
• Learn where in your operation you can utilize mobile automation solutions to optimize your operation
Agenda

• All those acronyms
• And the terms
• What AGVs can do
• How to select what’s right for you
• The questions to ask
The Alphabet Soup of Mobile Automation

Robots, mobile robots, autonomous robotics, vehicles, driverless…

AGV – Automatic Guided Vehicle
AGC – Automatic Guided Cart
LGV – Laser Guided Vehicle
AMR – Autonomous Mobile Robot
SGV – Self Guided Vehicle
MiR – Mobile Industrial Robots
AIV – Automated Indoor Vehicle
VGV – Vision Guided Vehicle
UGV – Unmanned Ground Vehicle
ATL – Automatic Trailer Loader
ATUL – Automatic trailer unloader
Robots, mobile robots, autonomous mobile robots are newer buzzword terms used to describe machines that can plot their own path, but these terms could also apply to AGVs. Confusing?

Sorting Out the Terminology

Automatic Guided Carts (AGCs) are lower-cost entry points to mobile automation and are used for material transportation and assembly line tasks. AGCs automate material movement and help reduce non-value-added labor cost in distribution as well as manufacturing operations.

Automated Guided Vehicles (AGVs) offer increased flexibility, additional capabilities, and numerous design variations compared to AGCs. AGVs are also more sophisticated and offer features not found in AGCs. (Also called LGV, but not by many)

Autonomous Mobile Robots (AMRs) refer to more of a navigation style and not a vehicle type, and the industry is beginning to zone in on ‘autonomous’ being a vehicle that doesn’t have to follow a strict path and is able to plot its own course from A to B within a defined area.
The Best Vehicle to Take Depends on the Road
AGV Equipment Comparison

• Which Mobile Automation solution technology is the best? It depends
  – “None of them” or “they all are”
  – Each technology has its Pros and Cons, as well as a special purpose
Your Approach – Work with Potential Vendors to

• Determine the best Mobile Automation technology or technologies that best fit your application

• Evaluate your needs (pain points) and determine the right best in class technology solution to meet your needs
AGV System Design Depends on a Series of Requirements / Specifications

- Environmental
- Load
- Transport
- Floor
- Rack
- Equipment
- System
- Other factors
Environmental Requirements / Specifications

- Layout
- Height clearances
- Tolerances
- Humidity/temperature
- Lighting
- Air flow
Load Requirements / Specifications

- Load type
  - pallet, container, roll, crate, tub, rack, box, etc.
- Dimensions
- Weight
- Fork pockets
- Load overhang
- Stability
Transport Requirements / Specifications

- Rate
- Distance
- Variable source/destination
Floor Requirements / Specifications

- Wheel load
- Flatness
- Material
- Friction
- Joints
- Incline
- Electrical resistance (ESD)
Racking Requirements / Specifications

• Rack height
• Clearances
• Overhang
• Rack type
Equipment Requirements / Specifications

• Height
• Clearances
• Location (fixed / dynamic)
• Type
System Requirements / Specifications

- Storage density
- Flexibility
- Reliability
- Facility size
- Fleet size
- Vehicle type(s)
- Complexity
- Speed
- Traffic (pedestrian or equipment)
Other Requirements / Specifications

- Customer preference
- Cost(s)
  - Hardware
  - Service
  - Installation
  - Maintenance
  - Total cost of ownership
- Future plans / roadmap
Vendor Questions to Ask?

- Where have you done this before?
- How does the system receive transport requests?
- How can/will the equipment interface into my existing systems?
- Will you test with my product during FAT?
- Will I need to change my processes?
- Tell me about your software?
- How will you support my solution ongoing?
- What other solutions do you offer to compliment Mobile Automation products?
What *Can* Mobile Automation Machines do?

- Almost anything – It’s just time and money
What *Should* Mobile Automation Machines do?

- Anything around elimination of non-value added tasks
What *Shouldn’t* Mobile Automation Machines do?

- Tasks involving value-added services
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