

SOLVE FOR X.

***Automatic
Guided Vehicles
(AGVs):
Elements &
System
Considerations***

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Elements & Considerations of AGV System Design

- Vehicle Type & Configuration
- Guidance Technology
- System Simulation
- Power Technology & Weight
- Floor, Grade and Other

Vehicle Type and Configuration

- Four Common Types



Fork



Lift Deck
Unit Load



Conveyor deck



Tugger

Heavy Load Vehicles

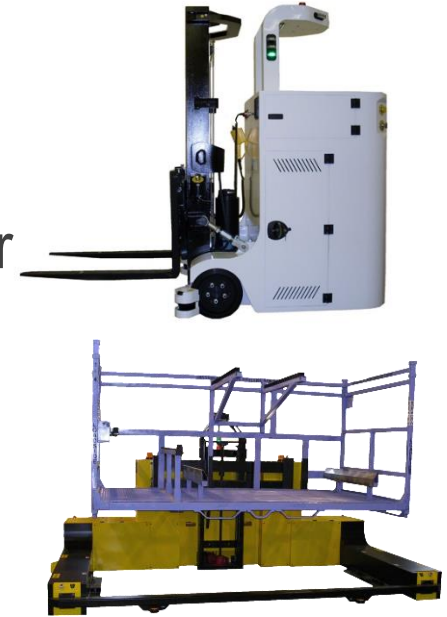
- Coils
- Ingots
- Jumbo Reels
- Custom



Fork Vehicle Considerations

- Outrigger, Counterbalanced or Under-rigger
- Pantograph or Traversing Mast Reach
- Single or Double Fork
- Side-shift forks
- All wheel steer - omnidirectional

Moving more product per move lowers and/or shorter routes reduces fleets size.



Conveyor Deck Considerations

- Single or Dual Conveyor
- Off-board Power requirements vs Fork AGV
- Layout considerations
- Fleet size vs fork vehicle
- Buffer consideration



Lift Deck AGV Considerations

- Turning radius
- Electric vs Hydraulic Lift
- Differential steering vs single steer drive



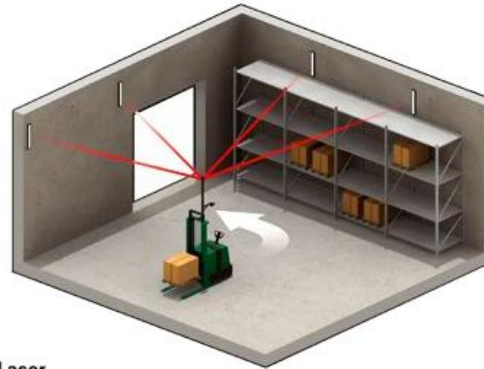
Tugger Considerations

- Braking – Negative g's to stop vehicle safely (esp. ramp)
- Grades – Much more torque to go up grade
- Automatic Coupling/Hitching



Guidance

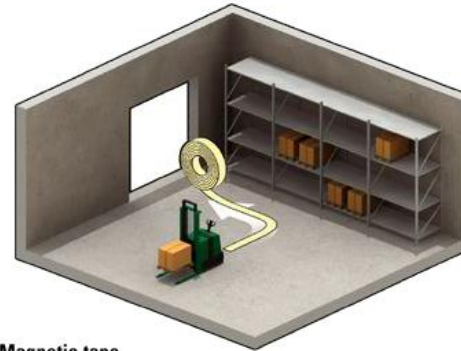
- Each varies
In cost,
Performance &
Flexibility



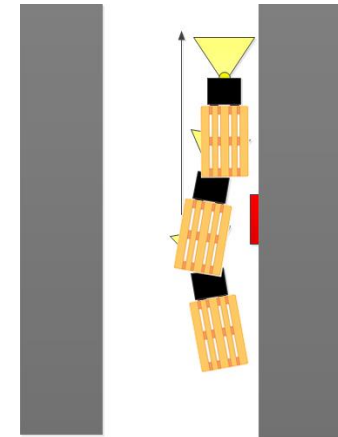
Laser



Spot



Magnetic tape



Power Choices

- Batteries – Vary in weight, cycles, cost.
 - Lead Acid
 - Lithium Chemistries – Higher Cost and Performance
- Fuel Cells
- Both are Zero Emissions
- Run time proportional to weight



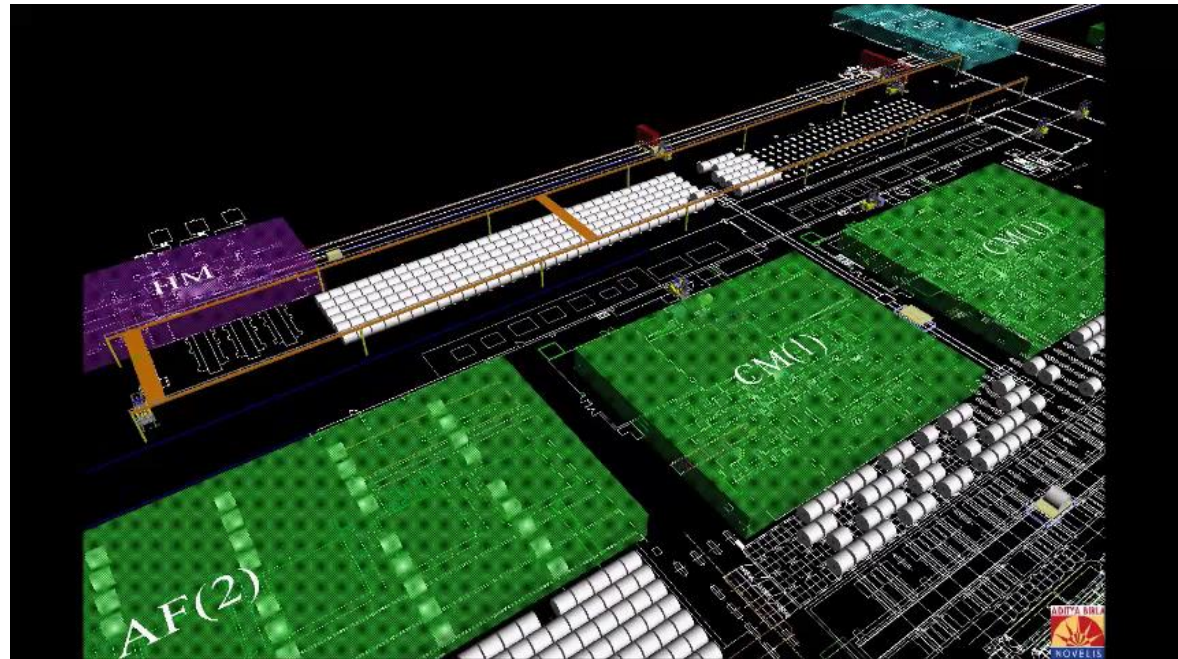
Fuel Cell Hybrid Systems



Hydrogen Refuelling

Simulations

- Good guidelines
- What-if Scenarios
- Software varies
- No humans
- Perfect Conditions



Other Considerations

- Temperature - Humidity
- Flooring needs to be conductive. Many new coatings are nonconductive. No visible difference.
- Drains, slopes or grades.
- EMI
- Wi-Fi Coverage

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For More Information:

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Or visit ProMat Booth S-3626