Warehouse Automation & Robotics:
Expectations vs Reality

Presented by:

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Siggins

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# Driving Forces For Automation: What We Know.

- Unemployment Down

- Labor Shortages

- Skilled Labor At Premium

- Hourly Wages Continue To Increase

- Workplace Injuries

- Rising Insurance Costs

- Increasing Safety Regulations

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What's Holding You Back?

- Uncertainty
- Downtime
- Return On Investment
- Upfront Expense
- Training Costs/Time

Rising Labor Costs

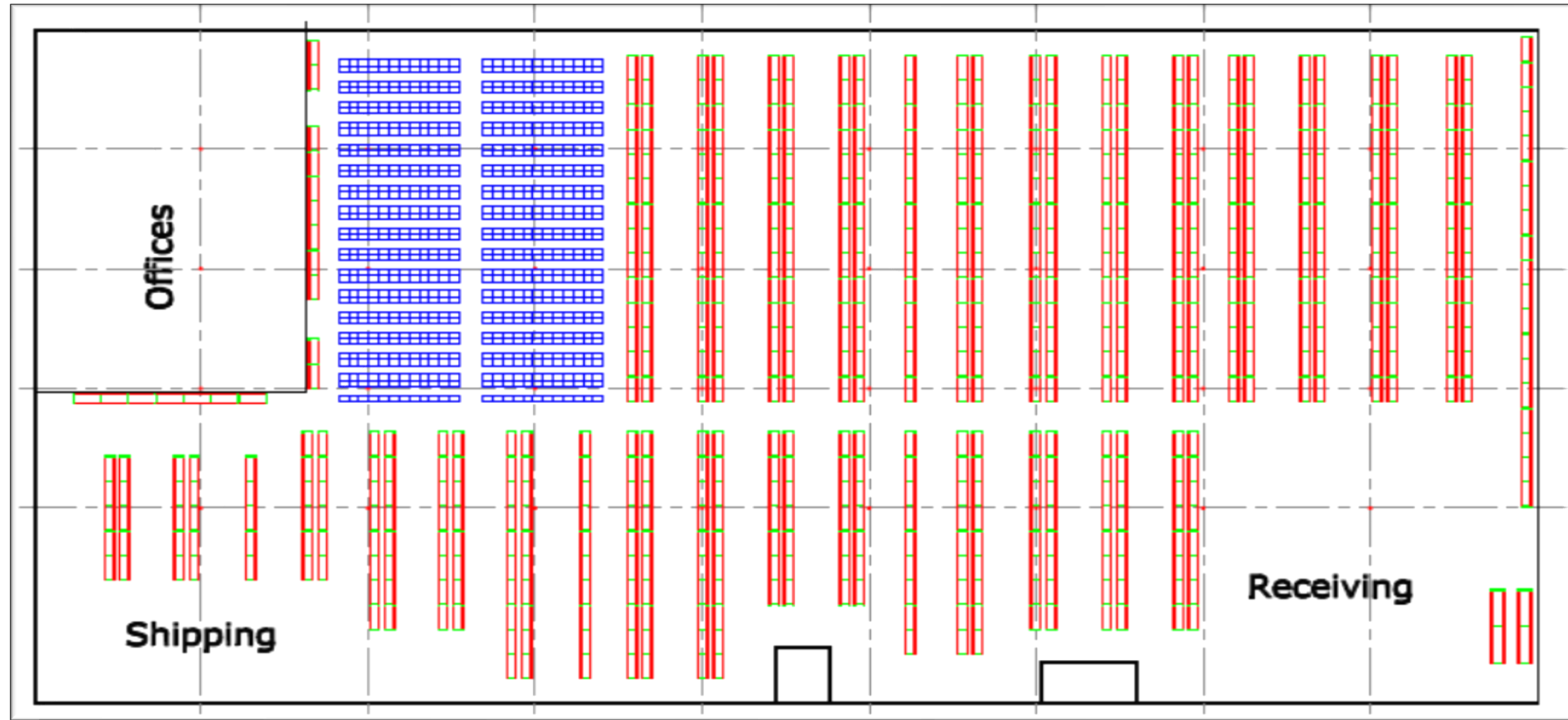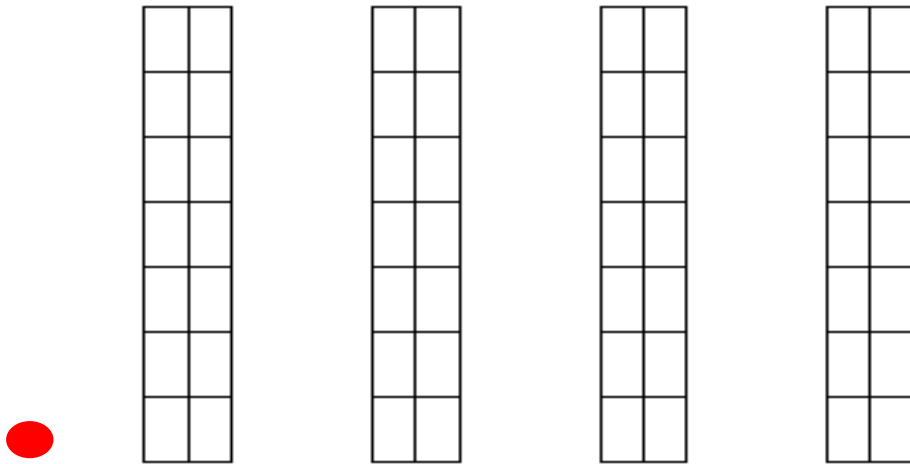## Average Hourly Warehouse Wages (2009 – 2019)
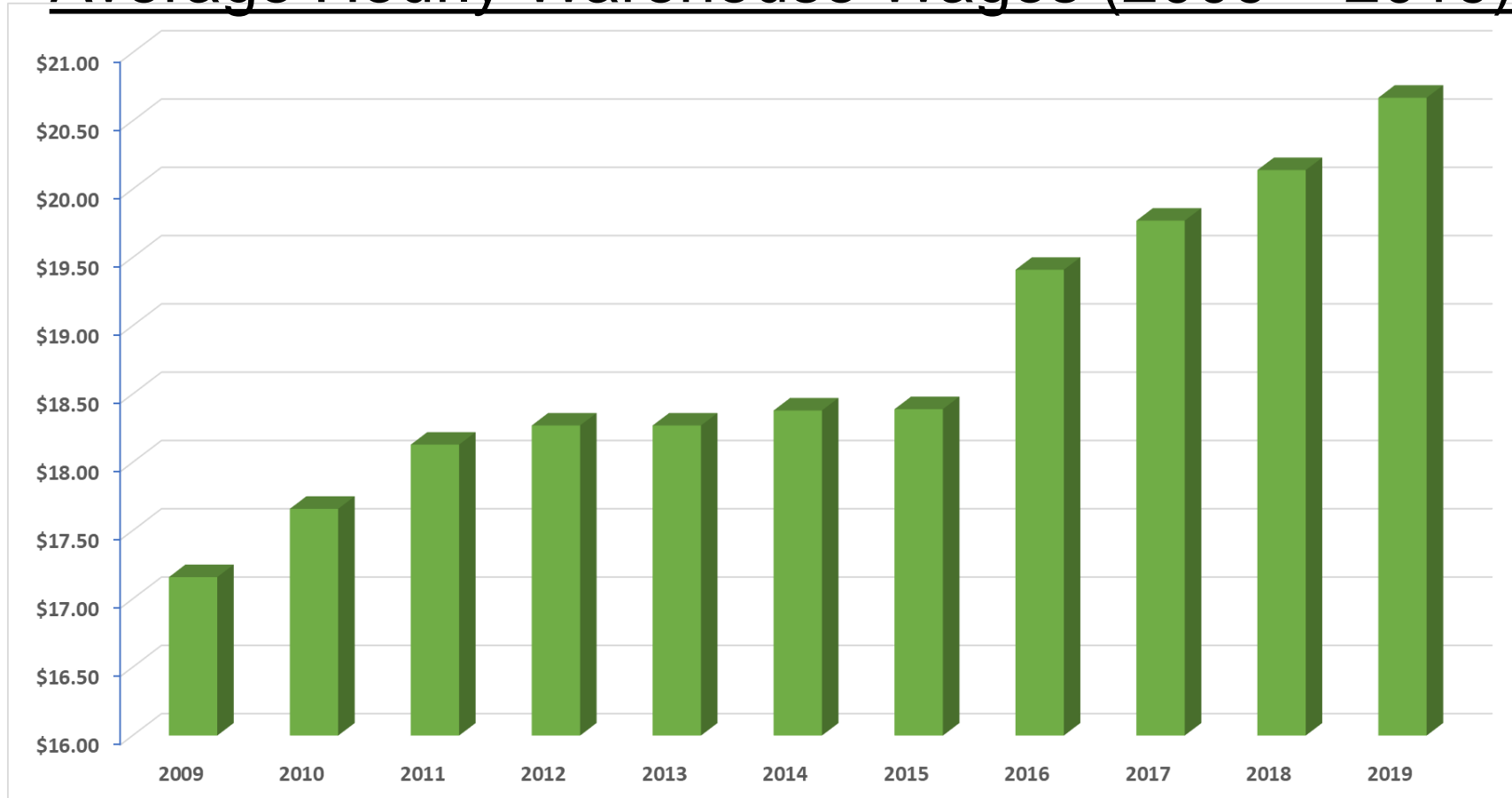
(Source: Bureau of Labor Statistics)

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160,000 Square Foot Manual Operation

Warehouse Layout
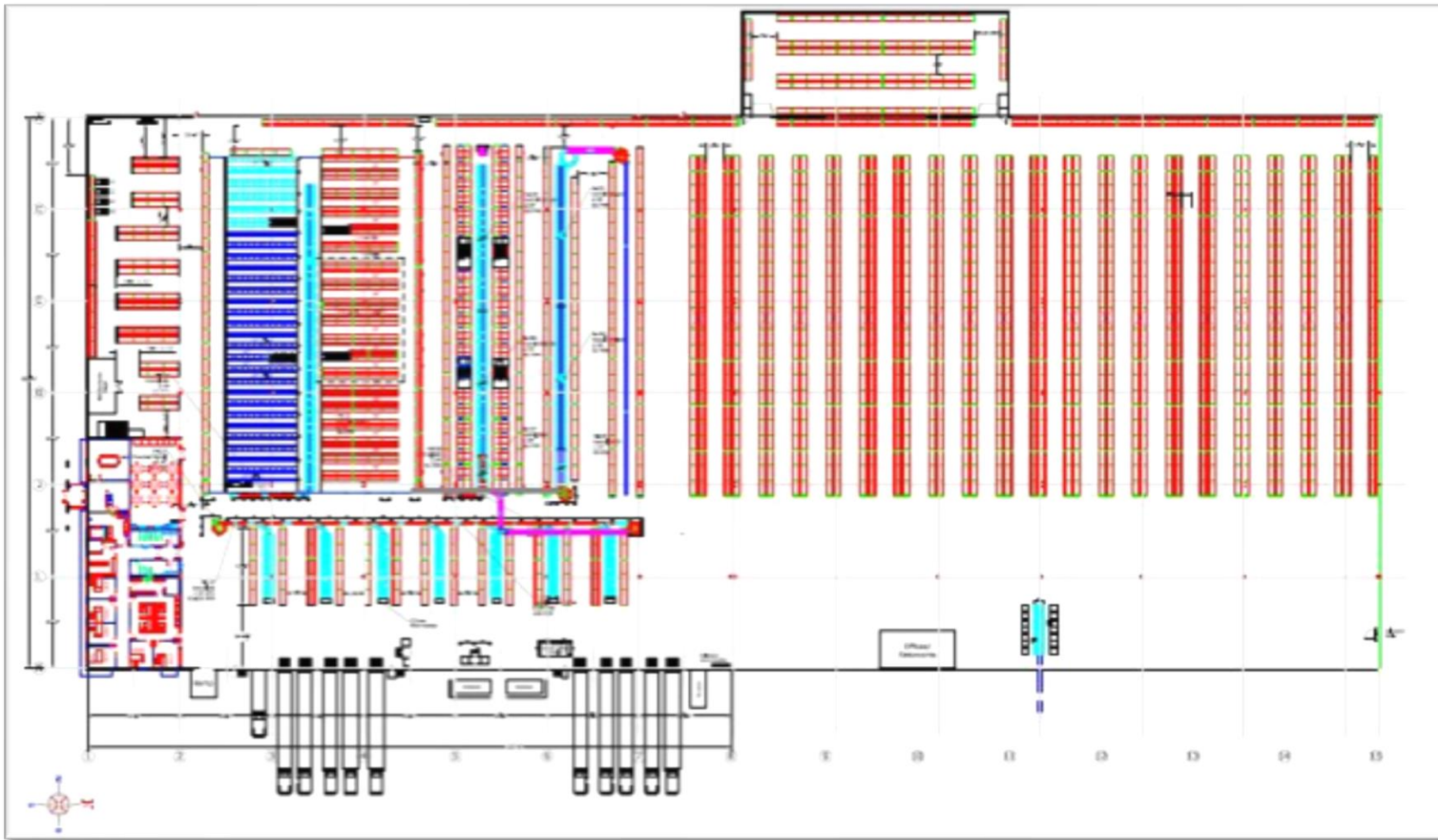
Where most DC's start

PLAN VIEW

Zoned Conveyor Implementation

Pallet Pick and Carton Flow with Pick-to-Light

Slotting/Inventory Analysis

DESCRIPTION	Suggested Placement	Y-T-D DEMAND	PREV 12 MO DEMAND	# times sold by selling increment	Selling increment per month	Selling increment per week
10GA 12FT 250 AMP BOOSTER CABL	Pallet Pick	6033	6159	6159	513	118
8GA 12' 400 AMP CABLE	Pallet Pick	5401	5239	5239	437	
4GA 20FT 500 AMP BOOSTER CABLE	Pallet Pick	2674	2933	2933	244	
4GA 12FT 400 AMP BOOSTER CABLE	Pallet Pick	2795	2583	2583	215	
INCAND UTILITY LIGHT 25 FT 16/	Pallet Pick	2210	2382	2382	199	
05327 25'UTILITY LIGHT	Pallet Pick	2014	2055	2055	171	
6GA 16FT 400 AMP BOOSTER CABLE	Pallet Pick	1560	1845	1845	154	
HUB ASSEMBLY	Pallet Pick	17135	14767	14767	1231	
HUB ASSEMBLY	Pallet Pick	19652	14636	14636	1220	
HUB ASSEMBLY	Pallet Pick	17604	12717	12717	1060	
HUB ASSEMBLY	Pallet Pick	12274	12508	12508	1042	
HUB ASSEMBLY	Pallet Pick	10784	9870	9870	823	
HUB ASSEMBLY	Pallet Pick	10499	9388	9388	782	
HUB ASSEMBLY	Pallet Pick	5935	6248	6248	521	
HUB ASSEMBLY	Pallet Pick	4966	5742	5742	479	
HUB ASSEMBLY	Pallet Pick	6894	5002	5002	417	
HUB ASSEMBLY	Pallet Pick	4510	4545	4545	379	
2 HD MUFFLER CL	Pallet Pick	52100	58950	1179	98	
2 1/4 HD MUFFLER CLAMP	Pallet Pick	51850	57650	1153	96	
2 1/2 HD MUFFLER CLAMP	Pallet Pick	49200	50750	1015	85	
CONVENTIONAL WIPER BLADE	Pallet Pick	102770	113110	11311	943	
CONVENTIONAL WIPER BLADE	Pallet Pick	80770	86460	8646	721	
CONVENTIONAL WIPER BLADE	Pallet Pick	82480	85070	8507	709	
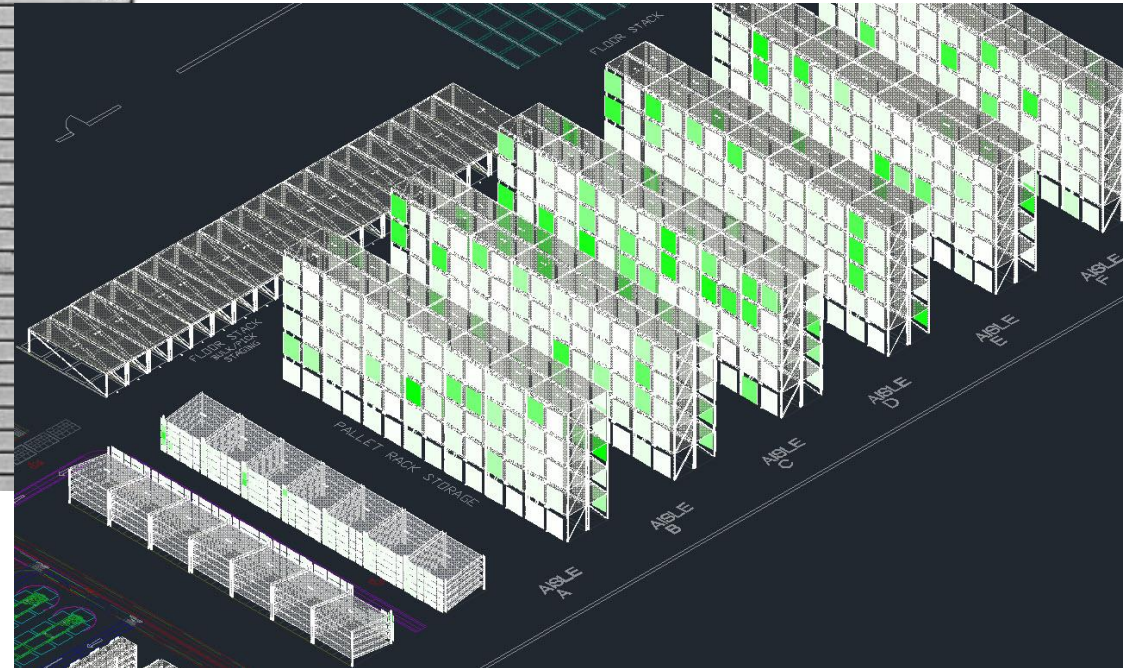
- 80 / 20 rule is more 70 / 30
- Lower 50% SKU just a few % lines
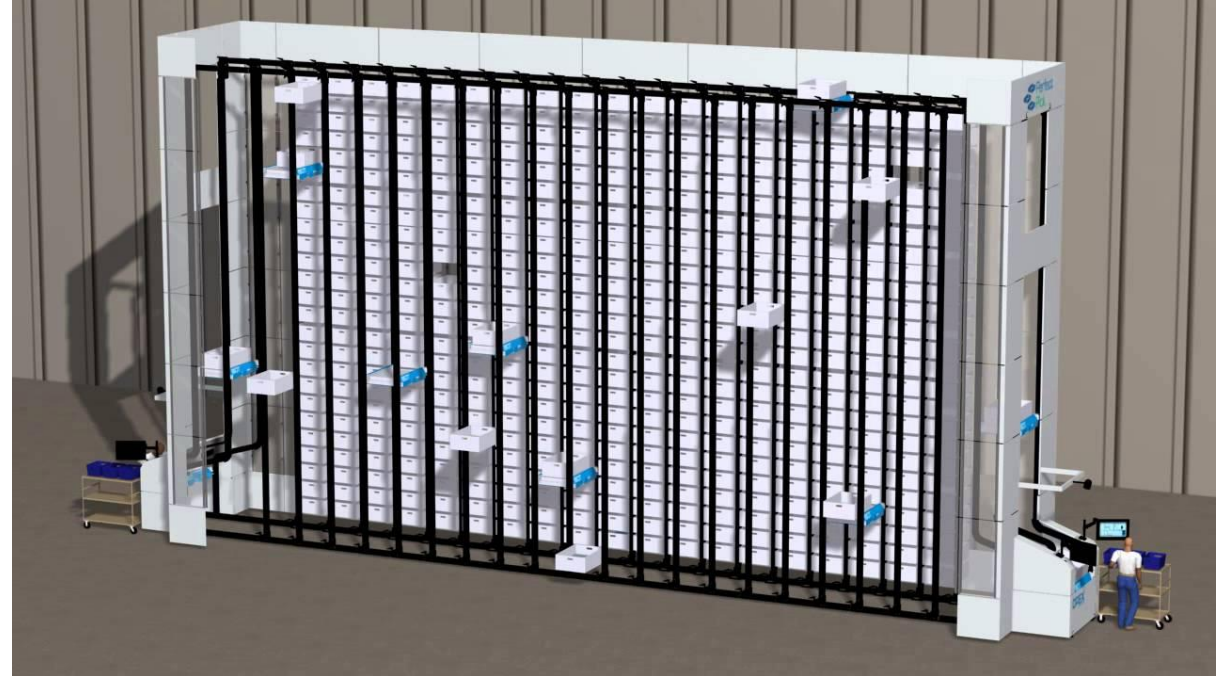- Slotting and slotting software

Goods-to-Man

- 400 lines (transactions)/hr
- Replenishment off shift?
- Not ideal for A-movers
- Limited by Tote Size
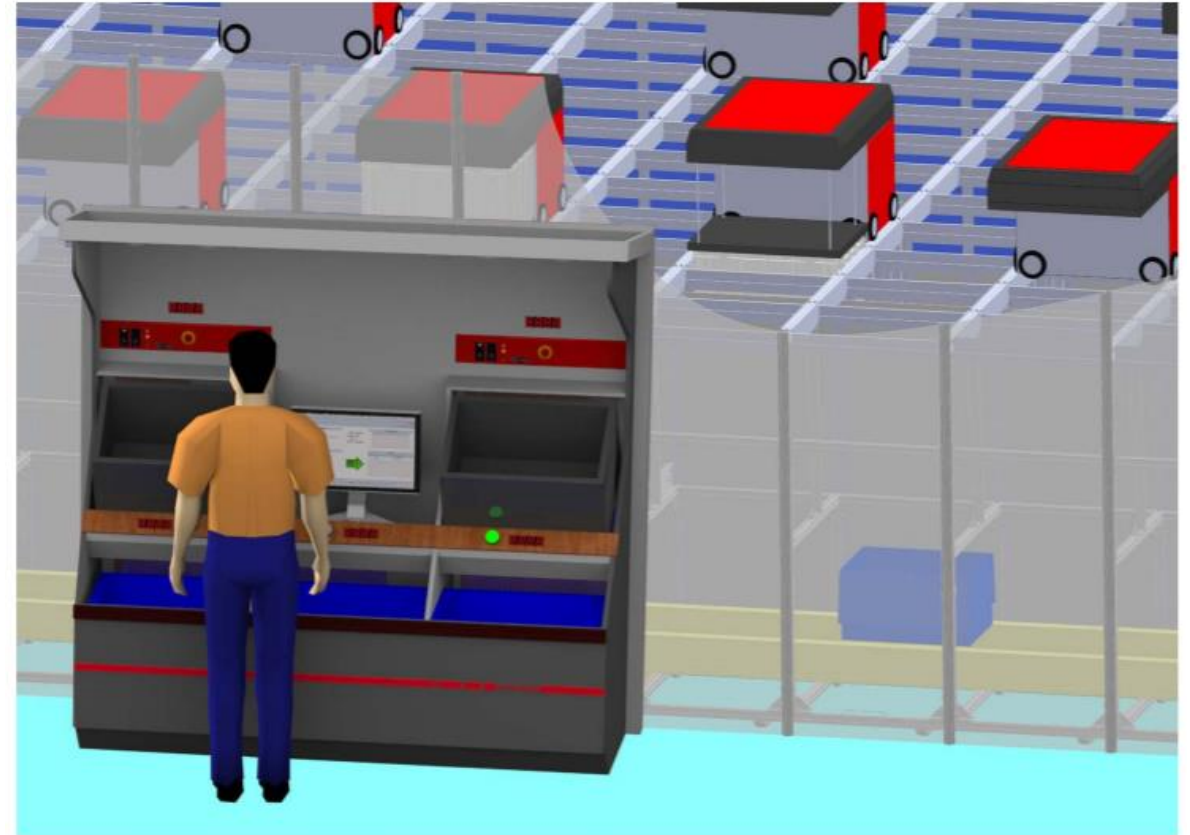
Automated Goods-to-Man
Example One

- $1m+ per aisle
- Storage over 32'
- Manufactured in NJ
- Local Maintenance Staff

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Automated Goods-to-Man
Example Two

- ~$5m per 13,000 square feet
- Storage to 16'
- 1 Receiving Station
- 2 Pick Stations

Example 1: Put Wall vs Goods-to-Man

Pick Module

- ~ 90 to 200 pick per hour
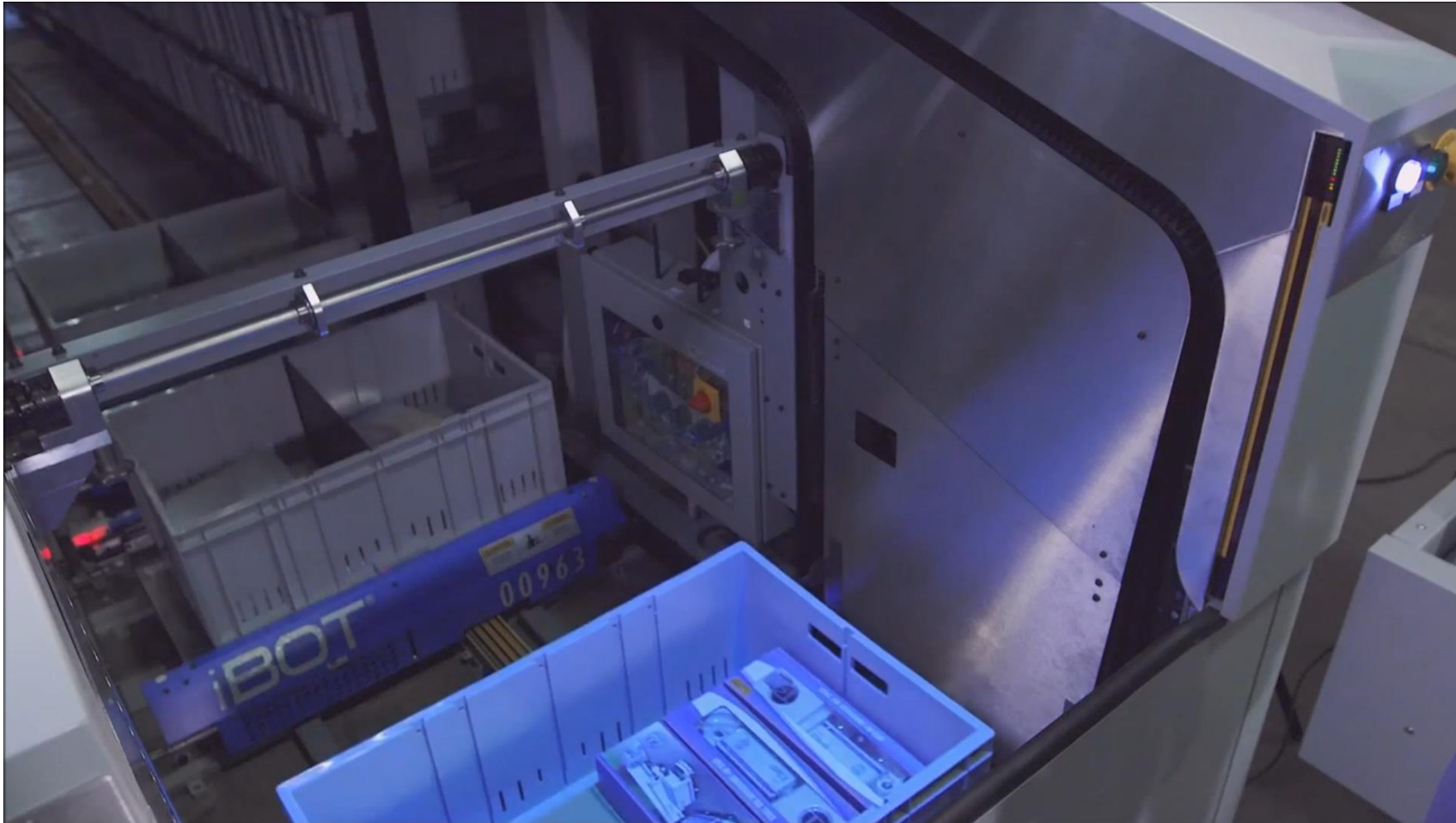
- Nominally 40 foot storage aisle

- Must be correctly slotted

- Uses zoned picking

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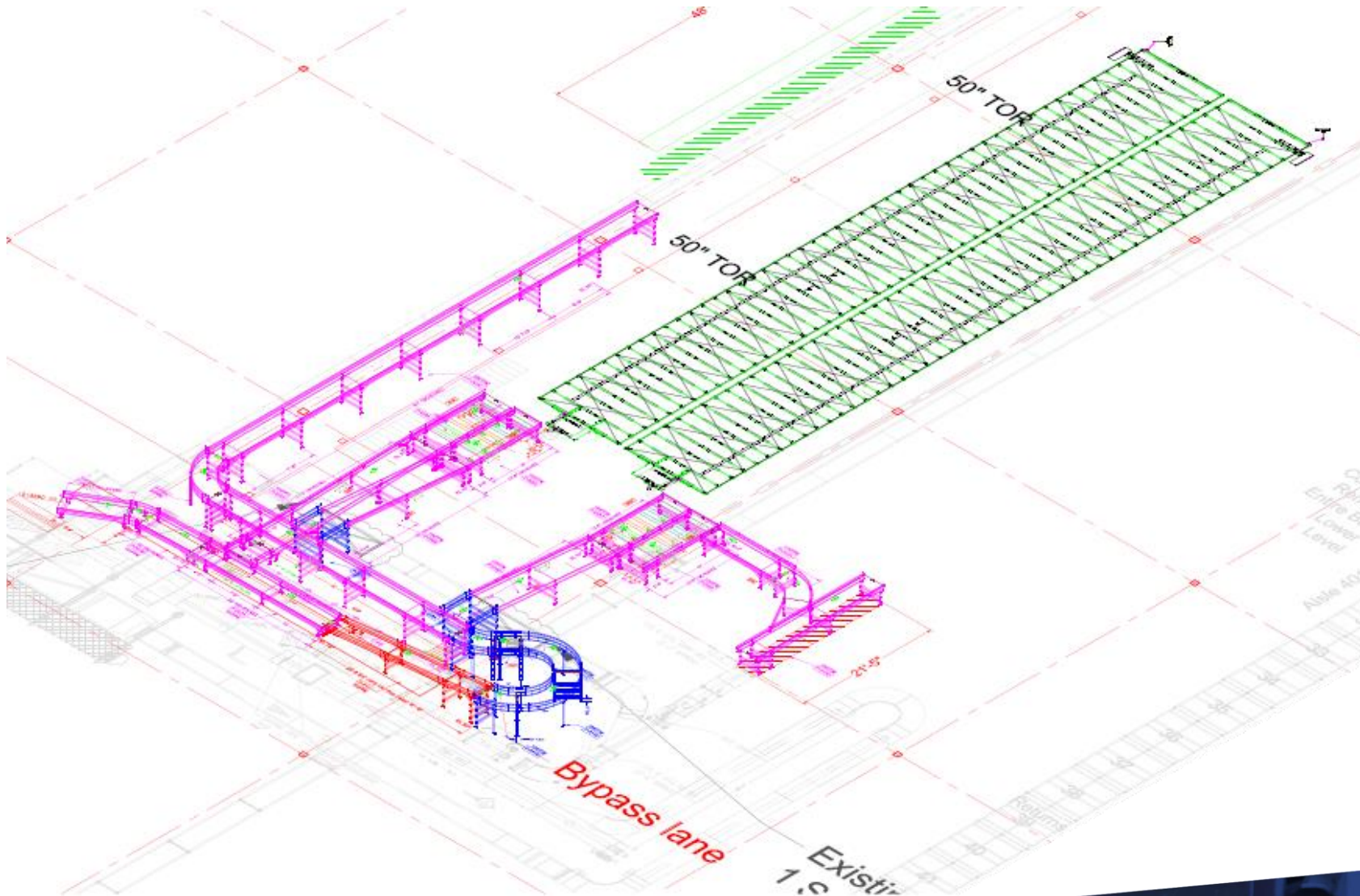powered by MHI

Pick Module

Automated Goods-to-Man Picking

Automated Goods-to-Man Picking - Layout

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Example 2: Automating a traditional put wall

Put Wall

- ~ 400 puts per hour

- Normally no longer than 20 feet

- Must have the correct order profile

- Next batch starts when wall is 50% emptied
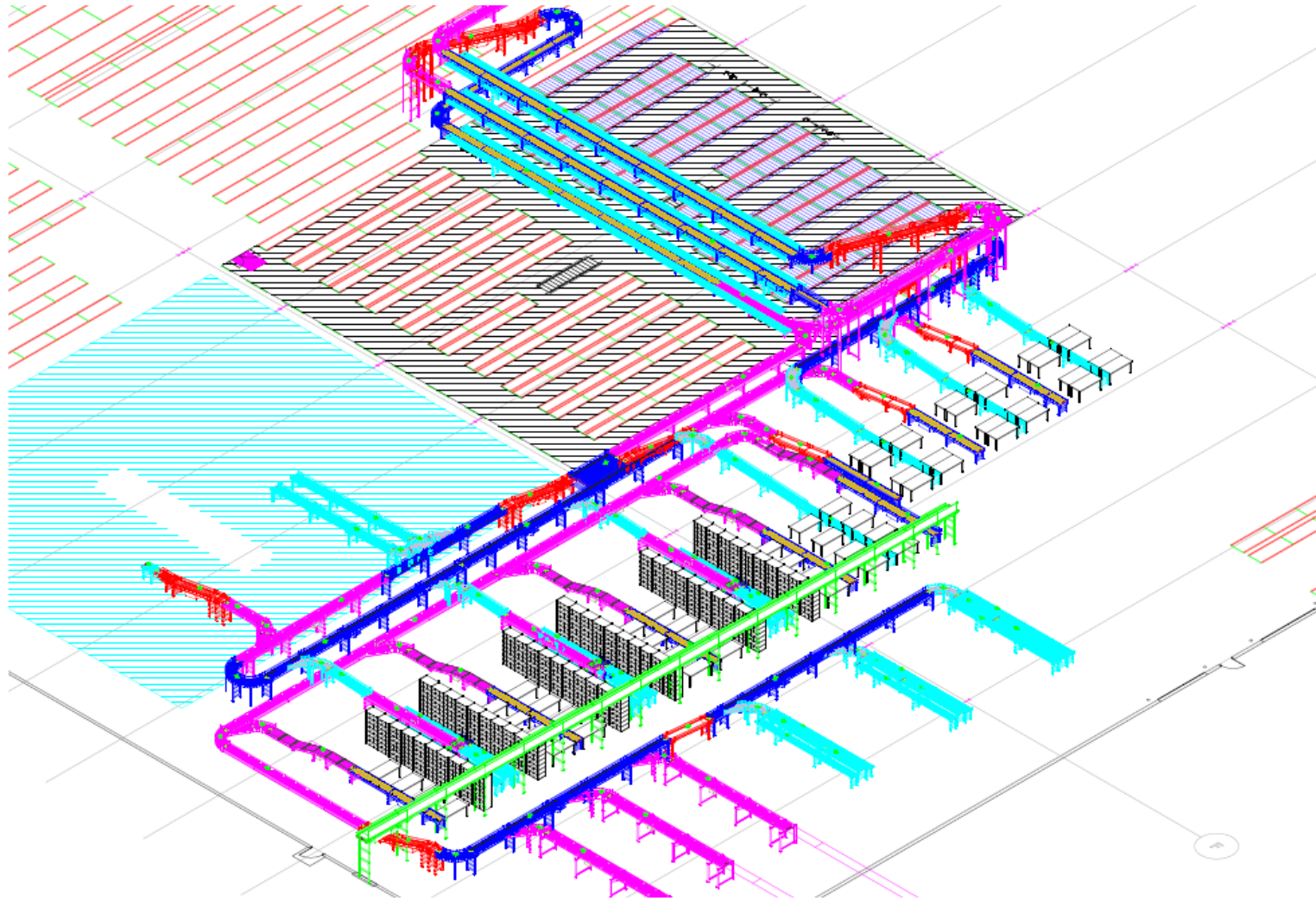
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Put Wall - Demonstration

Put Wall in Action

Put Wall Layout

Automated Sortation Put Wall

- ~ 2400 puts per hour

- No longer than ~50 feet

- Must have the correct product size

- Standard software API

Automated Sortation Put Wall

Example 3: Autonomous Robotics
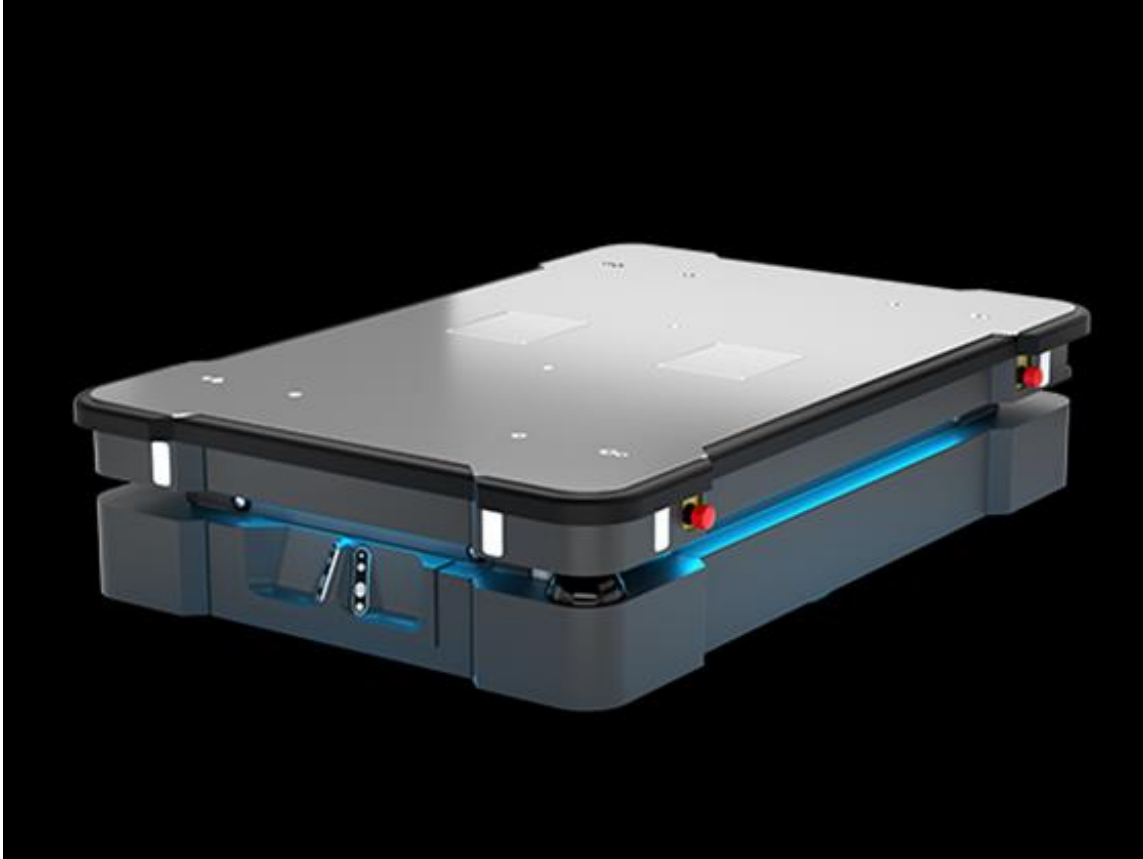
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Pallet Jacks/Forklifts

- Personnel costs

- Safety hazards

- Maintenance costs

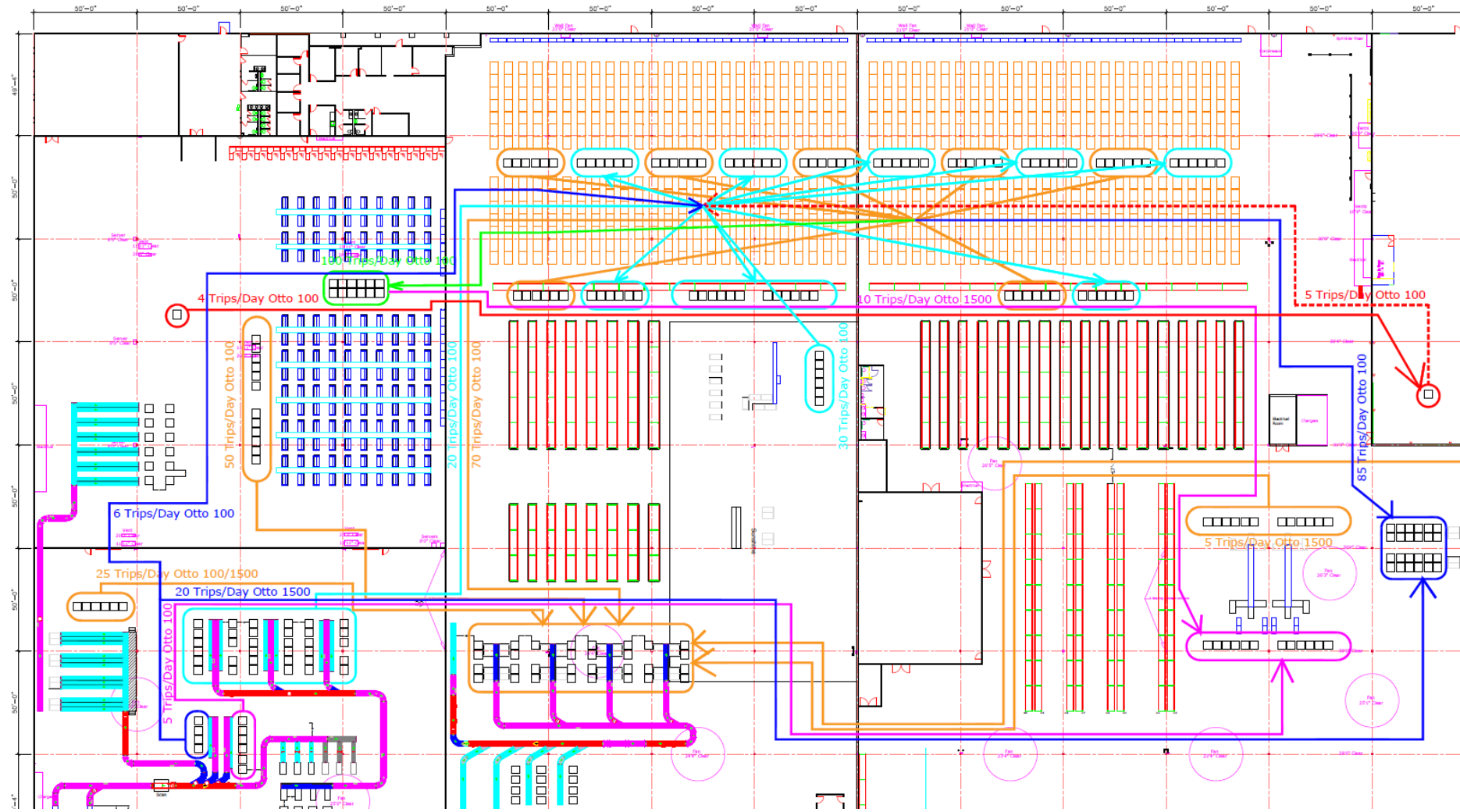- Potential for damage to products/equipment

Autonomous Robotics

- 3 to 4-year ROI

- Self driving with collision detection

- Low maintenance requirements

- Software integration is key

Autonomous Robotics

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Robotic Movement Path

THANK YOU!

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Or visit MODEX Booth #9229

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