



Who is the best candidate for robotic lift trucks (RLT's)?

- Multiple shift
- Repeatable paths
- Long runs
- Dedicated head count

Where do RLT's not work?

- Outdoors
- Rough floors
- Below 32° F
- Application where the walls, rack, building columns are blocked by stacked loads
- Grades steeper than 3%

Who is best to contact?

- Operations
- Automation engineers
- C level
- Safety people
- Cost improvement engineers
- Plant managers

Why are businesses investing in automation?

- Fast ROI
- Increases put away accuracy
- Helps reduce accidents
- Difficulty finding qualified workers
- High turn over
- Applications that are dirty, dangerous or demeaning

How safe are RLT's?

- Compliant with ANSI/ITSDF B56.5
- Always default to stop
- Senses ground level obstacles as well as items suspended such as a ladder on the back of a burden carrier

Can RLT's pass each other in the aisle?

Yes, but there are safety clearances as defined by ANSI/ITSDF B56.5

What happens when the battery gets low?

The RLT reads the battery state of charge (BSOC). When the BSOC reaches the point that the truck needs to be charged, the RLT can be programmed to drive to the charging station and sit and beep, send an email, or send a text to the designated contact to charge the truck.

Do I need perfect pallets?

No, we can handle disposable pallets with a CB stacker. Center riders require Grade B or better pallets. Note: There are ways in which we can handle lighter pallets.

Do I need to modify the building to get an RLT to work?

No, we use the existing infrastructure to guide the truck.

If a path change is needed does Yale need to make the adjustment?

Yes, for major changes. No to most changes, alternative paths are built in during installation.

What is the lead time?

26-36 weeks after purchase

What are terms?

30/30/30/10

Can I lease an RLT?

Yes

Who does the maintenance?

All RLT's are purchased with a full maintenance agreement which includes Yale Vision, Fleet services, all maintenance and parts, a fixed set of wheels and tires, all licenses fees, and all sensor repairs. Only exclusion is damage caused by misuse.

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Frequently asked questions



Integration

Are there limitations to where RLT's work?

- It does not work outdoors or in environments below 32° F
- Floor must be relatively smooth
- No grades steeper than 4%
- No vinyl (due to static energy)

Will RLT's integrate with my WMS or ERP?

It doesn't fully integrate, but will fully interface. Integrate means the RLT and the WMS would use the same system. Interface means that the WMS sends a signal to an intermediate database, where the signal is interpreted and sent to the RLT using a custom connection and Combox.

How long does integration take?

6 to 9 months depending on the number, type and site complexity.

Can I adapt the robotic technology to an existing truck?

No, existing trucks are not optimized to receive this technology (precision, speed distort issues).

Operations

How does the RLT manage loading / unloading? Knowing when docks need to be emptied for example.

Front chassis sensors and drive by scanning report to the Robot Manager to dispatch RLT's within zones.

How does the truck navigate?

- Using a laser and a navigation module, the RLT maps the warehouse to determine its location precisely in real time.
- Targets, ground wires, reflectors not necessary.

How long does a fully charged battery last?

Depends on the battery type:

- Lead battery = 8 hours depending on the missions
- LTO = 2 hours

Do the RLT's need to be monitored?

No. They are fully autonomous.

How do they switch from automated to manual mode?

- Push of a button
- Step on the truck platform
- Take control the tiller handle

What happens if our network goes down or the battery dies?

- RLT's finish their circuit reservation then stop
- Following restart, they resume mission priorities

Costs

What is the average cost of a truck?

Basic price range starts at \$100K.

What is the ROI for a truck?

12 to 24 months depending on the number of shifts.

Do these trucks replace operators?

No, they do not replace jobs. They free up workers to focus on more value-added tasks.

How long do RLT's last?

- 4 to 5 years with proper maintenance
- Life limits is associated with truck limitation on operating hours.

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Objections to expect

Can't afford it - Financial/ROI:

- 1 year ROI in a 3 shift operations
- 2 years in 2 shift
- Reduce labor costs
- Lack of labor force

I don't want to have to make physical changes to my facility to accommodate the equipment.

Our solution works with your existing facility and requires no infrastructure changes.

I don't want to have to work with a lot of hi-level software.

We can keep it as simple or complex as your application requires.