

Yale[®] Robotics

FREQUENTLY ASKED QUESTIONS



WHO IS THE BEST CANDIDATE FOR ROBOTIC LIFT TRUCKS (RLTS)?

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

WHERE DO RLTS WORK?

- Indoor applications
- Clean, flat floors (<3% inclined plane)
- Single temperature zones (above 32° F)
- Gaylords, skids, CHEP pallets

WHO IS BEST TO CONTACT?

- Operations
- Automation engineers
- C level
- Safety managers
- Cost improvement engineers
- Plant managers
- Information technology (IT) managers
- Environmental, health & safety (EHS) managers
- Sustainability specialists

WHY ARE BUSINESSES INVESTING IN AUTOMATION?

- Reduce operating costs
- Increase put away accuracy
- Help reduce accidents and avoidable damage
- Ease burden of finding qualified workers
- Combat high operator turn over

HOW SAFE ARE RLTS?

- 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 RLTS 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 indicates that the battery needs to be charged, the RLT is programmed to return to the charging station area. Auto charging options can enable the truck to then dock and charge without a person initiating charging.

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

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WHAT ARE TERMS?

30/30/30/10

CAN I LEASE AN RLT?

Yes.

WHO DOES THE MAINTENANCE?

All RLTs 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.

Integration

ARE THERE LIMITATIONS TO WHERE RLTS 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 RLTS 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 RLTS 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 RLTS NEED TO BE MONITORED?

They are fully autonomous, though a floor supervisor is needed. A floor supervisor responds if the RLT encounters an exception that requires intervention.

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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?

- RLTs 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 RLTS LAST?

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

Objections to expect

I CAN'T AFFORD IT.

- Fast ROI (1 year in 3-shift operations, 2 years in 2-shift operations)
- 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 RLTs work with your existing infrastructure. However, optimizing your workflows and facility for automation is an important step towards maximizing productivity and obtaining a desired ROI with robotics, so infrastructure changes and traffic flow adjustments may be recommended. These recommendations are part of the full solution from our team of experts.

I DON'T WANT TO HAVE TO WORK WITH A LOT OF HIGH-LEVEL SOFTWARE.

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