AUTOMATION for the STRIPING INDUSTRY

LifeMark® Systems for Paint Trucks from

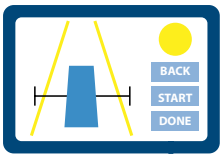
LIMNTECH
SCIENTIFIC, INC.

LimnTech Scientific, Inc. offers several systems for robotic operation of striping trucks for layout or maintenance re-stripe.

LifeMark®-100
Automated Layout System

LifeMark®-300
Automated Re-striping System

LifeMark®-400
Automated Striping System

LifeMark®-100 Automated Layout System	LifeMark®- 300 Automated Re-striping System	LifeMark®- 400 Automated Striping System
		
		
		
		
		
		
		
	***The LifeMark-300 and LifeMark-400*** *systems recognize all colors and types of lines, new and worn, over new and old concrete or asphalt, and will turn paint guns on and off as needed. The systems can control both sides of the striping truck. Paint and glass bead installation is monitored via an in-cab video view. Both systems are available to retrofit any long line paint, thermo, epoxy or polyurea striping truck.*	

Key Components in Our LifeMark® Systems:

TOUCHSCREEN CONTROL BOX IN DRIVERS' CAB

The touchscreen control box is typically floor-mounted via a RAM mount providing an adjustable sturdy fixture to minimize movement from vibration. The layout and size of the floor mounting plate can be customized to suit the truck chassis or cab configuration. The length of the post can be chosen to ensure that the monitor is close enough for the driver to use while operating, without blocking the drivers' view. The RAM mount system provides virtually unlimited flexibility.

COMPUTER CONTROL BOX ON DECK

The LifeMark® computer control box is waterproof and mounts into an enclosure for protection and to minimize vibration. The wires from each component route to this box which bolts securely to the deck floor and requires a rectangular hole through the deck to accommodate the wires. Access to the box is required for servicing.

SMART CYLINDERS MOUNTED INTO CARRIAGES

The system uses Smart Cylinders to replace the existing carriage movement cylinders. These cylinders have electronic sensors that communicate the carriage position to the computer control box. The cylinders are custom ordered to fit into the striping truck; existing cylinder details are required to ensure a drop-in mechanical fit. The Smart Cylinders also have electrical wires that will route to the computer control box. When planning the location of the wire fitting, make sure to allow for access and ensure that carriage movement will not compromise the wires.

VALVE BODY TO CONTROL SMART CYLINDERS

The system will typically utilize the existing striping truck hydraulics. We will install a valve body system wired to the computer control box to vary the flow of hydraulic fluid to each Smart Cylinder. The control of each carriage requires the hydraulic system to provide sufficient fluid flow at less than 500 psi Pressure

FIXED POINTER SYSTEM, TYPICALLY LASERLINE

The pointer system options include a front roof mounted fixed LaserLine green laser pointer to guide the driver during recording for single operator recording. A rear mechanical or laser pointer system is used for drivers capable of guiding the truck via rearview mirrors, typically used in close city or turn lane situations. The system can also record using a rear operator guiding the carriage over the existing pavement marking using the paint truck rear steering wheel.

LOCATION CORRECTION INS BOX

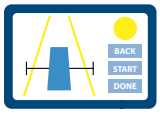
The INS box is mounted securely in a position close to the deck in a protected area. Wires run from this box to the GPS antennas and to the computer control box.

TWO GPS ANTENNAS AND TOWERS

Two GPS antennas are required and must be approximately 10 feet apart in a straight line; they are typically mounted on the drivers' side of the truck, securely to the deck, and bolstered by attachment to an existing fixed body, like a compressor or guardrail. The location and size of the footplate and side mounts are custom designed to suit the truck deck layout while minimizing vibration of the GPS antennas

TWO CELL PHONE ANTENNAS

The cell phone antennas are typically mounted onto a location high enough to work but remain in a safe area of the deck. They can be mounted on top of the computer control box.



IN-CAB GUIDANCE SYSTEM

A pointer system helps guide the driver during restripe. Cameras on each side of the truck display the carriage position over the existing pavement marking. The driver simply needs to stay in his lane.

OVERVIEW CAMERAS, CARRIAGE CAMERAS AND TOWERS

The overview cameras are typically mounted at a location high enough to work and in a safe area on the truck. Carriage cameras are mounted to view the carriages. The camera mounts are custom designed to suit the striping truck.

FIXED RECORDING CAMERAS

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LifeMark® Installation Procedures
for an Existing Paint Truck

- A visit is typically required to survey the truck and to propose location choices for each component. Once options are finalized, drawings are completed and shared for final approval. **Custom parts are ordered based on the truck requirements**.
- The assembly time required for the mechanical, hydraulic, and electrical components is dependent on truck and customer requirements.
- On-site Training provided with every LifeMark system.
  Might include monthly costs.

The LifeMark®-100 Automated Layout System consists of several components working together to provide automated control of a full-size striping truck's paint carriages. The system is designed to record pavement marking location via operator guided pointer or camera in conjunction with RTK corrected, accurate GPS defined location data.

DURING LAYOUT, carriage control is achieved by the LimnTech Scientific computer control box moving the carriage via a Smart Cylinder connected to the paint truck's existing hydraulic system. The existing paint truck paint gun controller system will control the on/off function of the paint guns, independent of the LifeMark®-100 system.

The LifeMark®-300 Automated Re-Striping System is designed to control the re-striping of pavement markings without a rear operator. Cameras are used in conjunction with patent-pending real-time artificial intelligence machine learning techniques and computer algorithms to accurately define restriping actions. No GPS, RTK, or cell phone connection required.

DURING RE-STRIPE, a Smart Cylinder guided by the LifeMark®-300 ensures the paint guns are accurately positioned over the worn lines. The existing paint truck paint gun controller system can still be used to control the on/off function of the paint guns, alongside the LifeMark®-300 system.

The LifeMark®-400 Automated Striping System is designed specifically to improve safety and efficiency in the roadway striping market. This system provides stripers with the ability to accurately record the location of roadway markings before the roadway is repaved and control the re-striping of pavement markings without a rear operator. Cameras are used in conjunction with patent-pending real-time artificial intelligence machine learning techniques and computer algorithms to accurately define re-striping actions.

Automated location recording assists re-striping operations using GPS, cameras, and computer software to control paint carriages and guns. No rear operators are required, the truck will ensure that the paint guns are located correctly and paint properly.

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SCIENTIFIC, INC.

office 215-703-5510 / fax 215-703-5511 / 515 Hagey Rd. **/** Souderton, PA 18964 **/ limntech.com**