

# Marked improvement

Upgrades to the LTL-M range of retroreflectometers bring greater flexibility and control to the inspection of road markings

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There is an increasing focus on traffic safety in a growing number of countries around the world. And there are many parameters to consider when working to encourage safe driving, among them improved signalization, road markings and road traffic signs.

The International Road Assessment Programme (iRAP), which has a vision of a world free of high-risk roads, has, over the past 20 years, assisted more than 70 countries in inspecting high-risk roads and tracking road safety performance. So far more than 500,000km (310,685 miles) of roads have been, or are in the process of being, inspected. As a result of this work, national road authorities have been guided on parameters related to the star rating of roads, safer roads investment plans and risk maps, with the goal of investing where the highest benefits can be made in terms of reducing the number of crashes, injuries and deaths.

## The importance of road markings

Over the years, iRAP has highlighted road markings as a low-cost safety improvement with a high benefit-cost ratio. In its recent report, *Vaccines for Roads*, the organization highlights examples of successful projects from the past 20 years. One such highlight is a Mexican delineation project of 4,200km (2,610 miles), where an estimated 10,540 deaths and serious injuries have been prevented; a project with a benefit-cost ratio of 17:1, the highest of the seven projects listed. This clearly shows that high-performing road markings are a very important factor in improving safe driving conditions – and also an improvement that is known for its relative low cost.

Another interesting project mentioned in the *Vaccines for Roads* report is Roads That Cars Can Read, a joint initiative of EuroRAP and Euro NCAP. The project found that the condition of road signs and markings could be the greatest hurdle in reaping the benefits of vehicle safety technologies such as lane support and speed alerts.

To evaluate whether markings and signs perform to a level where they can help people to drive safely, they need to be inspected at regular intervals. Depending on the type and quality of the markings, and the amount of wear from traffic, such inspections should be carried out once or twice a year. In addition, inspections will enable road owners to optimize maintenance work and costs, knowing exactly when they have to repaint markings.

## Handheld and mobile options

Retroreflectometers are used to inspect road markings. These instruments come as handheld and mobile units. Handheld retroreflectometers, such as Delta's LTL-XL and LTL-X Mark II, provide a spot-check of the markings, while mobile instruments, such as Delta's LTL-M, provide continuous measurement and full coverage of the markings measured at traffic speed.

Since its launch in 2011, Delta's LTL-M mobile retroreflectometer has gathered a proven track record of being a robust and reliable instrument. The main advantage of LTL-M is its ability to automatically compensate for movement in the vehicle during driving. This ensures accurate measurement results in line with handheld instruments, with a typical repeatability of  $\pm 3\%$  and a typical reproducibility



of  $\pm 5\%$ , during all driving conditions. Because of its ability to automatically compensate for movements, the LTL-M can be mounted on almost any type of vehicle and can be transferred between vehicles easily. LTL-M is almost as simple to operate as a handheld device.

## Latest improvements

In 2017, Delta launched a number of software upgrades for the LTL-M, based on input from current customers. The upgrades



will make the daily use of LTL-M more flexible and improve presentation options. The equipment now offers a choice of what measurement IDs (a file name or identification code for the measured data) to transfer; a faster data and overhead video transfer time; the possibility of choosing picture frames instead of full overhead video; the addition of pictures to results mapping; better control of lines during measurement; and invalidate measurements.

At an operational level, Delta recently entered into a cooperation with Hi-Lite Airfield Services. During 2017, Hi-Lite has started using the LTL-M

in airports, initially in North America, and it plans to introduce LTL-M to the Middle East during the second half of 2017. Hi-Lite states that the use of the reflectometer will increase the rate at which airfields can be assessed. Reflectivity of markings is essential for pilot visibility while landing and while traveling around the airfield, but it is also important for other vehicles in traffic areas – if reflectivity is poor it is a serious safety concern. Hi-Lite plans to use Delta's LTL-M when completing airfield assessments throughout the world, to ensure they are as safe as possible for travelers. ■

Above: **LTL-M in operation, measuring night-time retroreflection and other parameters**

Inset: **LTL-M being used for airfield measurements**