## Technology Profile | 🕞

## Turning VMS gantries into traffic measurement points

key part of traffic management includes maximizing throughput during peak hours when traffic volumes are highest.

The maximum throughput of a single lane is between 1,500 and 2,500 vehicles per hour. The speeds at which this throughput can be achieved are between 49mph (80km/h) and 62mph (100km/h). Achieving optimal throughput is a fine balancing act – a single car slowing down, for example, to allow a motorist in front of it to enter the lane, can cause a phantom traffic jam.

For most highways, the speed limit is between 68mph (110km/h) and 80mph (130km/h). Others do not have a speed limit at all. When traffic is moving at a high speed, the maximum volume is substantially lower.

The most common way for traffic management systems to maximize throughput is to measure the volume and speed of traffic at frequent locations along a highway. When the volume reaches a certain threshold at a given site, the maximum speed at preceding sections can be lowered to 62mph (100km/h) or less to avoid the onset of a phantom queue. Motorists can be informed about the speed limit via variable message signs on gantries above the highway.

Some highways around city centers have numerous gantries with variable messaging signs (VMS) to relay feedback to motorists, allowing authorities to inform them about speed limits, lane closures and other vital traffic information. These gantries also serve as perfect mounting locations for overhead traffic detectors to obtain accurate traffic data from individual lanes.

ADEC Technologies offers overhead detectors, such as the



Overhead detectors can be neatly mounted right above the lane for maximum accuracy

## Need to know

The triple-technology detector (TDC3) uses three sensing technologies to ensure accurate data is acquired

- The detectors use radar to identify each vehicle's exact speed
- A proven ultrasonic sensor scans the vehicle's height profile and determines each vehicle's class
- A passive infrared sensor (PIR sensor) assesses the exact position of vehicles in lanes
- Specifically designed to be fitted onto overhead gantries

triple-technology detector (TDC3), which features multiple sensing technologies to acquire highly accurate traffic data.

## Accurate data acquisition

The benefits of mounting detectors on overhead gantries include not having to damage the pavement to insert alternative detectors such as inductive loops; easily accommodating shifted lanes due to

construction; accurate traffic data acquisition, even when mounted inside tunnels and immediate detection of queues and vehicles traveling in the wrong direction.

One version of ADEC's overhead detector provides configurable trigger output to tie into third-party equipment, such as ALPR cameras, while another version integrates a quarter video graphics array (QVGA) snapshot camera to automatically capture images of irregular traffic conditions (such as cars moving in the wrong direction), to visually verify and reduce response times for law enforcement teams.

Like most VMS, all of ADEC Technologies's TDC detectors are compatible with the protocols defined by the German TLS (Technische Lieferbedingungen für Streckenstationen) standard.

The detectors are available in several versions, depending on the mounting location (in front of or behind the gantry) and the number of distinct vehicle classes they can differentiate.

Vehicle classification data is welcome information for road

operators and can be used, for example, to obtain statistical information about the composition of vehicle classes or to adjust speed limits, not only for the overall traffic volume but for specific vehicles to minimize the environmental impact.

TDC3 detectors for classifying vehicles into the common TLS 8+1 classification scheme deliver accuracy of 85-99.9%, which has been independently verified. Special versions of TDC3 detectors are also available to retrofit older installations from previous generations of overhead double- and tripletechnology detectors from other manufacturers.

Every day thousands of TDC3 overhead detectors help to maximize traffic throughput and minimize delays from phantom traffic jams and other disturbances by delivering upto-date, reliable and accurate traffic data at all times. O

