POLISCAN
SPEED ENFORCEMENT
**Speeding**

According to the World Health Organization, speed is at the core of the global road injury epidemic. Studies estimate that over 1.2 million people die each year on the roads worldwide and 20 to 50 million suffer non-fatal injuries. These are alarming statistics that confirm road traffic injuries are a global health and development problem. Attention must be paid to the needs of road users, including the most vulnerable group: pedestrians, motorcyclists and cyclists. As such, a global understanding and focused effort on road safety is essential to tackle this issue.

One key area in improving overall traffic safety is the application of speed enforcement.

A number of effective interventions have already been identified in the management and control of vehicle speed. VITRONIC aims to make a significant contribution in this field with its POLISCAN enforcement systems.
Next Generation Speed Enforcement

In modern traffic enforcement, LIDAR (Light Detection and Ranging) technology forms the basis for effective traffic monitoring and surveillance. The high-precision and consistent measurement technology has largely replaced the conventional, technically limited concepts, such as radar. LIDAR technology is the foundation of VITRONICs POLISCAN systems for speed monitoring.

The LIDAR Technology – How it Works

LIDAR measurement is based on the transmission of a “fan” of laser beams. Over 15,000 light pulses per second detect all vehicles, track their position and generate an exact spatial picture of the traffic situation in real time. The high repetition rate of the laser pulse ensures a precise calculation of the speed of all vehicles. Additionally, the vehicle classes can also be identified.

VITRONICs LIDAR technology offers considerable advantages in traffic monitoring; it is possible to clearly and accurately detect multiple vehicles across several lanes in both directions simultaneously. Even in dense traffic, POLISCAN is a fully automatic solution, without the need for sensors in the road surface.

The continuous vehicle tracking function enables record evidence images to be taken at optimum photo trigger points. The result is a high image quality of offending vehicles without occlusions by other vehicles, especially critical in the case of multi-lane roads.

POLISCAN systems guarantee the highest level of measurement accuracy and reliability for the evidential documentation of traffic offenses. The recorded measurements, specific vehicle class and the associated images are completely documented, encrypted and saved.

One System for All Application Scenarios

Hazardous traffic situations each arise due to a result of different characteristics. Inner city roads, highways, country roads, construction sites and curved roads all comprise of different risks for road users. Speed enforcement operators are confronted with variable conditions for speed measurement, depending on each location. With POLISCAN, VITRONIC offers a measurement system that can be optimized for any application scenario, complete with appropriate housing.

POLISCAN for speed enforcement can be used as a fixed, semi-stationary system and as a mobile device. Thanks to its flexibility, POLISCAN is able to detect multiple violation types simultaneously such as speed, average speed, lane-related and tailgating violations.

POLISCAN Systems at One Glance

» Measures all vehicles on several lanes
» Accurately assigns offenses to vehicles, even in heavy traffic
» Works fully automatically
» Distinguishes between different vehicle classes
» Designed to allow maximum flexibility during use: one system for fixed, semi-stationary and mobile speed enforcement
» Simultaneous enforcement of multiple violation types: speed, lane-related and tailgating violations
» Records significantly more infringements than radar-based systems
Fixed speed enforcement provides a sustainable way to alleviate permanent accident areas. Depending on the nature of the traffic situation to be monitored, such as road width and number of lanes, POLISCAN systems can be used in permanent roadside housings. The available designs minimize installation efforts, have a small environmental footprint and fit in aesthetically with their surroundings.

Design Housings for Every Application Scenario
The POLISCAN enforcement system is embedded in design housings, providing optimum support for the LiDAR measuring technology.

The CITY DESIGN HOUSING 1 consists of rotatable segments and accommodates up to two POLISCAN systems with two flashes. This configuration allows flexible bidirectional enforcement from a traffic median or from a road shoulder with front or rear violation documentation capture.
» Monitoring of one or two driving directions
» Enforcement from the median or shoulder
» Freely rotatable segments, covering all possible intersection angles

Due to its passive cooling system CITY DESIGN HOUSING 2 is particularly tailored for hot climates. It is ideal for sites requiring enforcement of one direction. Bidirectional enforcement is also possible if documentation of offenses is permitted from both the front and rear of the vehicle.
» Reduced power consumption
» Preassembled for quick installation and easy ongoing maintenance
» Extendable with a crown upgrade unit for additional enforcement functionalities

The COMPACT CITY TOWER is a slim column solution which effortlessly blends into its surroundings and has a minimal footprint. With its modern design and interlocking foundation, the COMPACT CITY TOWER can be easily disassembled and repositioned at other locations.
The COMPACT CITY HOUSING is an economical solution that allows POLISCAN systems to be elevated in a position up to three meters high. The compact housing unit is suitable for sites where space is limited, such as on pavements or on the roadside.

- Pole mounted multi-lane LIDAR enforcement
- Economic housing solution
- Elevated position safeguards against vandalism
Dynamic traffic situations need flexible enforcement solutions. Operators have to react flexibly and promptly in order to ensure increased traffic safety at short-term danger spots like highway construction sites or in inner-city hotspots such as thoroughfares or in front of schools. POLISCAN for mobile speed enforcement makes this possible.

**Maximum Flexibility Thanks to Deployment**

**Tripod**
Easy to set up mobile deployment on a tripod allows for unobtrusive speed enforcement.
- Fully automated, unattended use without manual site calibration
- Up to twelve hours of mobile enforcement with a single lithium battery box
- Extendable with a remote camera or documentation unit for bidirectional enforcement or secondary video evidence

**In-Car Installation**
For even faster and more flexible mobile deployment, POLISCAN can be installed in a vehicle, for greater operational site selection. In-car installation provides extra protection and comfort for the operator.
- POLISCAN can be installed in the front, side or rear of a vehicle
- Automated enforcement allows the operator to concurrently work on case files
- Extendable for bidirectional enforcement or secondary video evidence
Remote Camera
POLISCAN can also be used as a remote camera in mobile operation. This requires a second POLISCAN measuring system which, depending on the configuration and measuring direction, records a front or rear image of the offence. The systems are connected via WLAN (WiFi) connection.

» Documentation of motor cycles with motorcyclist photo and license plate
» Simultaneous enforcement including driver image in both direction of travel
» High-quality vehicle images, even on distant lanes in one direction
» Increases the number of possible measuring situations and thus the ability to cover a greater number of problem areas

ENFORCEMENT TRAILER
The ENFORCEMENT TRAILER enables long-term or permanent automated speed enforcement at accident hotspots that lack the necessary infrastructure required or that represent a danger to operators. Examples include building sites, road bends or inner-city hazardous areas. The ENFORCEMENT TRAILER can be easily transported to any location and quickly set up for automatic capture of traffic for several days with minimal risk.

» Autonomous, unmanned enforcement operation (up to ten days)
» Suitable for transport by virtually any vehicle with a tow bar
» High protection against vandalism
» Own, remote-controlled drive for convenient positioning and on-the-spot maneuvering
» Optionally integrated modem for wirelessly transmitting case data and remotely accessing the POLISCAN system
AVERAGE SPEED ENFORCEMENT

Long stretches of road or tunnels often incite drivers to speed. To increase traffic safety on complete road sections, speeds need to be monitored not only at one particular point in the stretch of road, but all along the danger zone. Comprehensive, automatic speed enforcement along road sections is possible with average speed enforcement.

With POLISCAN SECO for a Safer Traffic Flow

POLISCAN SECO determines the average speed driven between two or more checkpoints, from "Point-to-Point". Vehicles are recorded when they enter and exit a defined section of road using vehicle identification via automated number plate recognition (ANPR). POLISCAN SECO reads international number plates at high speeds with maximum accuracy with its invisible infrared light source. This allows the system to discreetly work effectively regardless of the time of day or weather conditions.

The average speed is calculated using a distance time ratio. If it exceeds the permitted value, the system documents the violation. Optionally, high-resolution driver photos can be recorded for any speeding violation.

Extended Classification

Besides accurately detecting multiple vehicles across several lanes, POLISCAN SECO is able to distinguish between several vehicle classes. Depending on the detected vehicle category, the system applies the applicable speed limits to the monitored vehicle.

Cooperating with Traffic Management Systems

For an improved traffic flow, POLISCAN SECO can be combined with traffic management systems such as variable traffic signs. In this way, POLISCAN SECO automatically adjusts the triggering threshold to the real-time valid speed limits, which align to present traffic and weather conditions.
Deployment Scenarios
POLISCAN SECO can meet any deployment requirements of respective road situations with flexibility to cater to fixed/stationary, mobile as well and semi-stationary operations.

**POLISCAN SECO T**
Recording of the vehicles takes place from an overhead position. POLISCAN SECO T can be mounted permanently on existing structures such as gantries or overpasses for roads that require continuous surveillance. Gantries are the optimal solution for wide, multi-lane road sections to be monitored.

**POLISCAN SECO S**
Recording vehicles takes place from the roadside. POLISCAN SECO S is integrated laterally into an appropriate design housing. Roadside installations require minimal groundwork without a need for lane closures during installation. POLISCAN SECO S is the preferred variant for monitoring roads with fewer lanes.

**ENFORCEMENT TRAILER**
Average speed enforcement doesn’t need to be set permanently on a specific stretch of road. POLISCAN SECO in the mobile application makes it possible to effortlessly change the section of road to be monitored, such as for short-term monitoring of a work zone. Integrated within the ENFORCEMENT TRAILER, POLISCAN SECO can be transported to any location and quickly deployed for automatic traffic monitoring over several days.

**POLISCAN SECO at One Glance**
- Continuous speed enforcement on long or dangerous road sections
- Improved traffic flow
- Extended classification from up to several vehicle classes
- Supports traffic management when combined with variable message signs
- Can be combined with other ANPR applications
- Able to be used in different deployment platforms: stationary/semi-stationary, from above/from the roadside
With speed enforcement from a driving patrol car, VITRONIC extends its enforcement portfolio to an additional field of application. Speed enforcement no longer needs to be in a stationary position, but is now able to be used even whilst in motion.

The POLISCAN system is installed in the trunk of an enforcement vehicle, behind the rear window. The speed measurements of passing cars are taken from the moving vehicle and the parameter of the system’s own travelling speed taken into account. Depending on the position of the POLISCAN systems, it is possible to measure up to four lanes either to the right or the left of the enforcement vehicle.

- Speed measurement of passing vehicles on neighboring lanes
- Installed in the rear of a moving enforcement vehicle
- Accurate „own speed“ measurement of enforcement vehicle
- Supports covert enforcement operations
EXTENDED ENFORCEMENT FEATURES

Lane Usage Monitoring
Restricted traffic lanes are frequently misused. Unauthorized driving on emergency and bus lanes puts other road users at risk. With POLISCAN, lane-related infringements can be recorded and documented.

» Complete or lane-specific through-traffic prevention
» Lane monitoring according to vehicle classes and enforcement schedule
» Immediate adaptability using time controls or remote access
» Can be combined with speed and red light enforcement

Tailgating Enforcement
Tailgating is a common cause of serious accidents and represents a major hazard on highways. LIDAR positioning enables POLISCAN to determine the headway between vehicles relative to the speed driven. If a vehicle does not maintain the prescribed safety distance, the system documents the traffic scene in image and video.

» Combined headway and speed measurement
» No additional lane markings
» Monitoring of both driving directions
» Video evidence of the traffic scene
VITRONIC is a global leader in the field of industrial machine vision headquartered in Wiesbaden, Germany. Since its foundation in 1984, the privately owned company has been offering highly innovative solutions in industrial automation, logistics automation and traffic technology. Today, VITRONIC supports customers in over 60 countries via a global network of subsidiaries, service centers and partner companies.

All of the companies’ products are developed, designed and manufactured by VITRONIC in Germany. They range from standardized to fully customized solutions.

Feel free to contact us – we look forward to hearing about your projects.

Full contact details and further information are available at www.vitronic.com