

## **AUTOMATED ENFORCEMENT SYSTEM : HOW DOES A CAMERA SYSTEM WORK.**

Sir,

I refer to the writings of **KW Woon from Penang – Thanks and no thanks to the AES system (The Star, 27<sup>th</sup> September 2012).**

Speed violations occur when a driver exceeds the designated speed limit for a specified stretch of road whereas red light violations occur when a car drives through a red light (typically at an intersection). These traffic offences can be detected and captured by Automated Enforcement System which comprises of the following components:-

1. Sensor,
2. Processing Unit, and
3. Camera

These components are vital to create an evident package (incidents) of an offence.

Sensor is used to automatically detect a traffic infringement the moment it takes place, via the detection sensor device, which is connected to the camera. For speed light infringement, the detection sensor device can either be in the form of in-road sensors such as piezos or inductive loops or non-invasive detection device such as radar or lidar (laser) or a combination of both devices. Meanwhile, in road sensors are used to detect traffic light infringement. These sensors can also detect excessive speed at red light intersections.

The data captured from the sensor is transmitted to the processing unit and it will be interpreted by the system. The processing unit will also calculate the speed of the vehicle as well as verifying it against the speed limit of the road. Image will only be captured if the vehicle is verified to have been committed

an offence. For instance, if a car is travelling at 90km/h in a 60km/h zone, the sensor will trigger the camera to capture the image of the vehicle.

The AES cameras are capable of capturing traffic offences in high quality multiple photo/images. For traffic light infringement, cameras are installed at locations where it will enable rear vehicle images to be captured, either in coloured or black and white image, for both day and night times. On the other hands, for speeding offences, cameras would capture front or rear images of the vehicle in coloured or black and white, for both day and night conditions. The image of captured offences are also born with watermarks highlighting the information of said offences such as time, date, type of offence, and place of the offence.

The system is highly secure where all data are encrypted and transmitted electronically, on online real time basis, from the camera to the Control Centre. Encryption is vital to avoid tempering during data transmission.

At the control centre, the infringement information will be processed by the Road Transport Department (RTD) officers to identify the owner of the vehicle, during which checking against RTD database (Sistem Informasi Kendaraan dan Pemandu – MySikap) will be done. Summonses will only be issued upon verification and validation of the offences, and be sent to the registered owner via registered post.

The implementation of AES is important as a catalyse to effective and efficient enforcement. The cameras are capable of capturing traffic offences regardless on single and multiple lanes. They are also able to capture different type of vehicles with different speed limits on the same lane or different lanes. Camera configuration and speed detection device to be installed at each blackspot is determined based on result from the project feasibility study. The cameras are also configured according to the specific speed limit of the blackspot locations.

The same principle applies for traffic light offence, however additional features are installed to enable the camera system to communicate with the traffic light system at the intersection. The camera system will need to know the status of that lane, i.e. is it in green, amber or red phase. For this type of offence, an image is only captured when a vehicle is detected to have passed through the stop line at the traffic light junction during red light with image showing the red light on.

To ensure integrity of the image produced, for traffic light offences, the camera will generate 2 images of the vehicle. The first image is captured when the vehicle has passed the sensors which is located after the stop line at the intersection. The second image is captured 2 seconds after the first image is captured. The second image proves vehicle progression through the intersection.

For both of the infringements, the camera system can be configured to a certain limit to suits legal requirements. For example, the speed offence image is now only captured when a vehicle is moving 10km/h more than of the speed limit at that site. Other countries gives 5km/h so again it depends on each legal requirements.

For traffic light camera system, it can be configured to give tolerance time when a vehicle passes through the stop line at the junction during red phase i.e. 0.01 seconds which is considered relatively high given that there is already amber phase to remind drivers to be ready to stop at the junction.

Thank you.