



APPLICATION STORY



FLIR thermal imaging cameras for 24/7 traffic monitoring and roadway surveillance

As the amount of cars on our roads is perpetually increasing, the demand for accurate traffic monitoring and roadway surveillance systems is rising correspondingly. Such systems need to operate 24/7, without pause. CCTV cameras are often used for this purpose, but these cameras have severe limitations when it comes to nighttime operation. They are also subject to many limiting factors during the day.

One of the main goals of modern traffic control systems is to avoid congestion. Intelligent traffic light control is an important factor in fighting traffic congestion in busy urban areas. Vehicle, cyclist and pedestrian detection is crucial. Based on accurate detection methods modern traffic light control systems can ensure a seamless flow of traffic, avoiding traffic jams. The data acquired can also

be used to analyze traffic flow over time, which is important information with regard to future developments.

Limitations of CCTV cameras

Many different sensors can be used for the detection of vehicles. Due to the increased effectiveness of commercially available video detection software CCTV cameras are often used. The installation

Thermal imaging cameras are not susceptible to sun glare, so they can be positioned wherever they'll be the most effective without concern for sun angle.



FLIR thermal imaging cameras can be used for traffic light control and vehicle counting, even in total darkness.

of cameras does not involve breaking up pavement, which is a necessity if you want to install ground sensors. However, CCTV cameras have a number of disadvantages. Sun glare, shadows, wet streets, snow, fog – all of these factors can limit the effectiveness of footage from CCTV cameras. The video detection software gets confused by the unclear image, making the traffic monitoring system prone to mistakes.



Visual image



Thermal image



Thermal imaging cameras can see cars at the stop bar and pedestrians at the intersection clearly in the dark.



This can be avoided by using thermal imaging cameras. Just like CCTV cameras thermal imaging cameras can be installed without breaking up the road pavement, but because they rely on thermal contrast instead of color contrast they are not hampered by the factors that limit the reliability of CCTV cameras.

See in darkness, through smoke and light fog

Thermal imaging cameras detect electromagnetic radiation in the infrared part of the spectrum, which is emitted by all matter as a function of its temperature. Based on the recorded intensity of infrared radiation they produce clear, high contrast images, regardless of lighting conditions. FLIR thermal imaging cameras can be used to see in complete darkness, through smoke and light fog.

Usually fixed mounted thermal imaging cameras are used for signal control. These cameras are mounted in one fixed position leading to one single field of view. FLIR Systems also produces thermal imaging cameras in pan and tilt platforms. These cameras can be turned and tilted to scan large areas. Often these camera systems also include a visual light camera for optimal vision in all lighting conditions.

Roadway monitoring

The pan and tilt platform makes these thermal imaging cameras perfect for another traffic related application: roadway monitoring. To detect traffic accidents and direct emergency services to the right location as quickly as possible CCTV camera networks for roadway monitoring are installed at many busy roads and in tunnels. Such monitoring systems help ensure the safety of road workers and improve the response time of emergency services in case of an accident or a traffic flow disrupting vehicle breakdown.

Automatic video detection software needs reliable video footage to function properly, however. CCTV cameras rely on good lighting conditions to function and they can be blinded by dusk or dawn sun glare, nighttime headlight glare, shadows, snow, fog, smoke or reflections on wet street surfaces. Using only CCTV cameras can therefore lead to road accidents going unnoticed, delaying the arrival of emergency services. FLIR thermal imaging cameras are not hampered by such limiting factors. They produce high contrast thermal images in all weather conditions and regardless of lighting, making them perfectly suited for working with video analytics software.

Easy to install and integrate

Whether your aim is to use them for signal control or for roadway monitoring, all of FLIR's thermal imaging cameras provide powerful imaging capabilities, at minimum effort. They are easy to install, as they are compatible with commonly used mechanical hardware such as mounting arms, cabling, and processors.

All FLIR thermal imaging cameras have a standard analog video output, but most thermal imaging camera models can also be connected to TCP/IP networks, making them very easy to integrate into existing video detection systems.

FLIR thermal imaging cameras provide extremely high image quality, up to 640 x 480 pixels resolution. Due to the rugged design of FLIR's uncooled microbolometer thermal imaging cameras they are practically maintenance free. No periodical maintenance is needed.

A cost-effective and efficient solution

Due to their excellent range performance, thermal imaging cameras can also help you to reduce pole and infrastructure costs. Given the fact that thermal imaging cameras can look directly into the sun and still detect vehicle, pedestrian, and bicycle traffic, they can be positioned wherever they'll be the most effective, maximizing safety and traffic detection without concern for sun angle and such. This makes thermal imaging camera the most efficient, cost-effective way to improve traffic flow, automatically determine traffic volume, and control signals.

Whether they serve as the backbone for the traffic control and roadway monitoring system or as drop-in replacements for existing visible-light cameras, FLIR thermal imaging cameras provide a robust imaging performance that you have to see to believe, making them pivotal pieces of equipment for effective traffic signal control and roadway monitoring.



Thermal imaging cameras see in total darkness and show you more scene detail.



Thermal imaging cameras see through glare and back-lighting, improving signal control.



Thermal imaging cameras see into the deepest shadows.

For more information about thermal imaging cameras or about this application, please contact:

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