Traffic detection cameras are plagued by lots of imaging challenges – sun glare, shadows, wet streets, snow, fog – all of which can confuse the analytics software that controls the lights and cause endless false calls and missed calls.

Affordable, high-performance thermal cameras solve all of these imaging challenges, giving traffic monitoring operators 24-hour uninterrupted detection of motorized vehicles, cyclists, and pedestrians regardless of the amount of light available.

Because they can see clearly regardless of lighting or weather conditions, thermal traffic detection cameras are the most efficient, cost-effective way to improve traffic flow, automatically determine traffic volume, monitor and control signals.

A Little Background

Thermal cameras make clear, high contrast images from heat not light, so they’re impervious to all of the common imaging challenges that plague traffic monitoring and control systems that use visible light imaging technologies.

This makes thermal cameras immune to direct sunlight (even at sunrise and sunset!), nighttime headlight glare, reflections off wet surfaces, deep shadows, smoke, and dust. In short, virtually any imaging challenge you can imagine can be overcome with thermal cameras.

Because they can look directly into the sun and still detect vehicle, pedestrian, and bicycle traffic, thermal cameras let engineers position them wherever they’ll be the most effective without regard of sun, shadow, or other factors that could reduce imaging efficacy, maximizing safety and traffic detection.

Thermal cameras see heat, not light, so they can even see in deep shadows like under overpasses.

Also, thermal cameras can easily differentiate between the heat signatures given off by cyclists, cars, and pedestrians. As drop-in replacements for the vast majority of existing visible-light CCTV cameras, and with robust imaging performance that you have to see to believe, thermal traffic detection and monitoring cameras are easy to install and integrate, making them the pivotal piece of any effective Intelligent Transportation System.

How Do Thermal Cameras Work?

Just like your eyes, visible light cameras (TV cameras, in other words) detect a very specific wavelength of energy radiated in the electromagnetic spectrum. This light is given off by the sun, and by light bulbs, then it reflects off an object and is detected by your eye or a camera. Just like with your eyes, if the amount of light available drops too low, a camera can’t make out what’s in its field of vision. Thermal cameras don’t have this problem.

Thermal cameras don’t have any of these limitations because they make images from the radiated heat energy that is around us all the time.
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This energy is actually more abundant than visible light – even during the day – so it can be easier to detect objects on or near the road with a thermal camera than with a visible light camera depending on the conditions.

But thermal cameras don’t just make pictures from heat, they make pictures from differences in heat. Thermal energy is given off by anything over absolute zero (-273°C), the temperature at which all molecular activity stops. So everything on earth gives off thermal energy that can be detected and turned into an image – even ice! What this means for those responsible for monitoring highway and roadway systems is that thermal cameras can detect things no matter how cold they are, or how hot.

What About Weather?
Atmospheric conditions can impact how well you can see with a thermal camera. Moisture in particular, in the form of rain and heavy fog, can decrease the distance at which you’ll be able to detect something, with a thermal camera, but you’ll still be able to see it from farther away than you could with a visible light camera under most conditions.

Snow can also cause minor degradations in image quality, but thermal has been field proven to detect traffic and roadway activity through heavy blowing snow that blinds the conventional TV cameras currently in use.

Because they can look directly into the sun and still detect vehicle, pedestrian, and bicycle traffic, thermal traffic detection cameras let engineers position them wherever they’ll be the most effective without regard of sun, shadow, or other factors that could reduce imaging efficacy, maximizing safety and traffic detection.

Whether an agency is installing a new system or upgrading from an existing network of day-light CCTV cameras, thermal traffic detection cameras use this powerful imaging technology to reduce the number of dropped, missed, and false calls, greatly improving the performance of any video traffic control system.

Because they don’t need lights to work, thermal cameras are the most environmentally-friendly traffic control option, saving agencies energy, decreasing light pollution, and minimizing vehicle exhaust emissions by optimizing traffic flow.

As drop-in replacements for the vast majority of existing visible-light CCTV cameras, and with robust imaging performance that you have to see to believe, thermal traffic detection cameras are easy to install and integrate, making them the pivotal piece of any effective Intelligent Transportation System.

Thermal traffic detection cameras replace for existing CCTV traffic detection cameras mechanically, electrically, and in terms of data interoperability. They use the same mechanical hardware, mounting arms, cabling, and processors that currently are installed on your poles. Because they use standard 24 VDC input power and output a standard analog video signal, thermal traffic detection cameras work with existing video detection and analytic systems as well as Ethernet based video transmission and VOIP installations. This interoperability means that crews can keep using the software packages they are familiar with, and agencies save the cost of retraining. Even better, thermal traffic detection cameras require no periodic maintenance and have no optical lens to keep clean.

Because thermal traffic detection cameras can see clearly 24/7 and output a video signal that maximizes the effectiveness of existing video detection processors, applications for thermal traffic detection cameras are virtually endless.

Beyond traffic flow control and monitoring, thermal traffic cameras are also used for incident detection, vehicle counting, tunnel safety, pedestrian detection, construction zone safety, and much more.

Get more information about thermal traffic detection cameras today, and see how with this simple technology upgrade, your agency can improve its efficiency overnight.

David is a writer and editor who has worked with thermal imaging cameras for over ten years. He lives in Portland, Oregon.

Thermal cameras along highways let you see vehicular activity from extreme ranges, even at night.