



TECHNOLOGY NOTE

Thermal Imaging: the Surveillance Solution

Thermal imaging is a technology that can provide many benefits in a wide range of applications. In particular, thermal imaging cameras have been deployed successfully as highly affordable solutions in the security industry. Accepted throughout the industry as the best 24-hour visual surveillance imaging solutions available, thermal security cameras are vital tools in securing borders, airports, sea ports, nuclear facilities, and other critical infrastructure. Today these affordable solutions are also protecting homes, corporate campuses, industrial facilities and retail businesses.

DEFINING THERMAL IMAGING

Thermal security cameras let people see what their eyes can't: invisible heat radiation either emitted or reflected by all objects, regardless of lighting conditions. Because they see heat, not light, thermal cameras are effective tools in any security setting. They can easily detect intruders and other potential hazards in any weather, as well as day and night.

Cameras that create images based on visible light—such as conventional CCTV or infrared-illuminated cameras—have the advantage of creating images that are familiar and easy to interpret.

Unfortunately, the ability of a given detector, whether the human eye or a camera sensor, to create these images relates directly to the amount of light available. At night, for instance, when there isn't much visible light, objects appear faint, or not at all.

In contrast, thermal cameras make pictures from heat, not light, having nothing whatsoever to do with reflected light energy. They see the heat given off by everything under the sun. Everything we encounter in daily life creates or reflects heat energy, called a "heat signature," which thermal cameras can see clearly.



Thermal security cameras are essential for protecting perimeters from intrusion.

CAMOUFLAGING FOLIAGE

Another limitation of relying on visible-light detection is visual contrast. Regular cameras that capture only visible light can be fooled



The World's Sixth Sense®



IR-Illuminated Camera



FLIR Thermal Camera

While intruders can fool IR-illuminated cameras by wearing clothing that camouflages them against backgrounds, a thermal camera captures their body heat clearly.

by visual camouflage, or situations where similar colors or patterns blend together and, thus, obscure objects or people that need to be detected. Thermal imaging cameras don't suffer this same problem. For example, an intruder standing under a densely-branched tree may be hard to detect using an IR-illuminated camera, but with a thermal imaging camera, the intruder would be clearly visible.

These advantages over visible cameras have led to the wide spread use of thermal to detect the presence of people in restricted or suspect areas, assess the tactical situation, and respond accordingly. No one within the view of a thermal camera can hide their heat. Thermal security cameras are the best tool to determine how many intruders are present, and, consequently, how many officers or agents should respond to meet the threat.

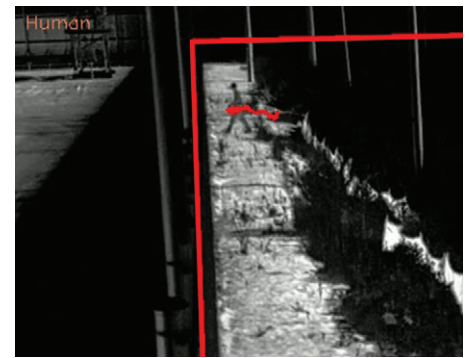
THE BENEFITS AND ADVANTAGES OF THERMAL IMAGING CAMERAS

One of the biggest benefits of thermal imaging comes in the domain of security. Security cameras have become a staple of protection for many (if not all) major businesses across the globe. In such a domain, the need to produce images of surrounding perimeters is critical to providing constant protection against potential intruders. No matter what you need to see, or what perimeter you need to protect, thermal security cameras let you see clearly, even in total darkness, and through camouflaging foliage, smoke, dust, and light fog.

BETTER ANALYTICS WITH FEWER FALSE ALARMS

Another reason why thermal imaging cameras often prove cost-effective is that they help reduce the number of false alarms experienced in a business protection scenario.

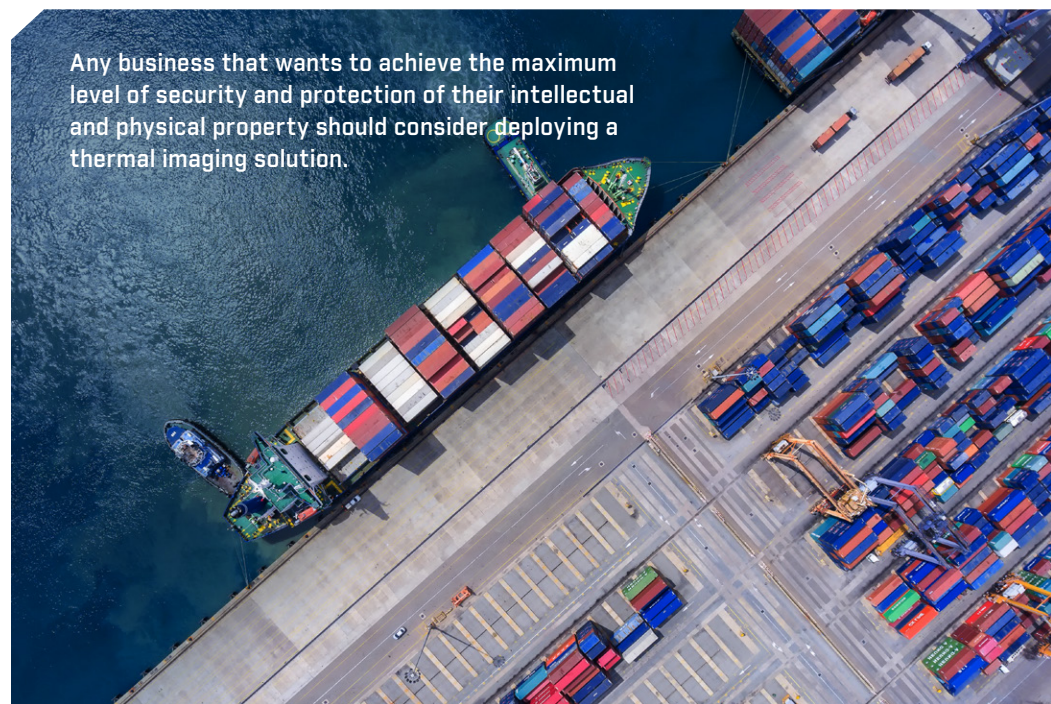
Visible light cameras can be easily fooled by many naturally-occurring phenomena, such as blowing trees, shadows, insects, birds, or oncoming cars. In terms of motion detection, microwave, fence sensors, motion sensors, RAFIG, and radar can all detect a possible intrusion, but they are essentially "blind" technologies compared to thermal imaging. When a motion sensor is triggered, a user still needs an additional method of assessing the nature of the alarm, in order to determine



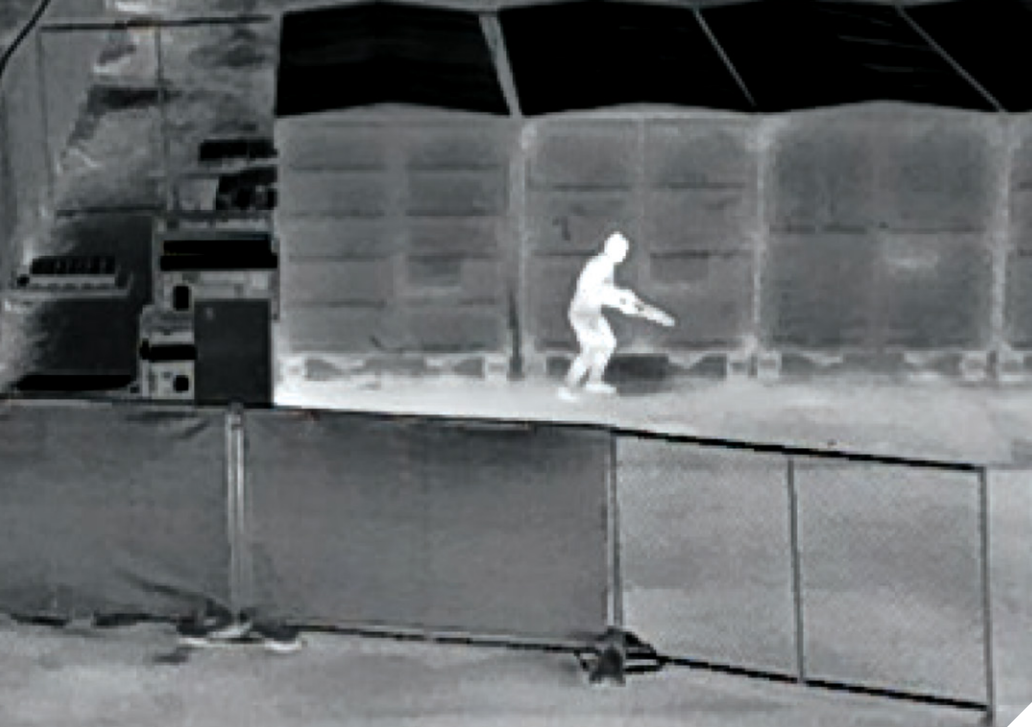
High contrast thermal video is especially ideal for video analytics.

the most appropriate response. For example, is it a person climbing the fence or just a harmless squirrel?

Because of thermal security cameras' high-contrast video output, security professionals



Any business that wants to achieve the maximum level of security and protection of their intellectual and physical property should consider deploying a thermal imaging solution.



Thermal imaging cameras are an affordable option for many businesses that want to ensure they have the best security and protection available.

have found that they work very well with video analytics. They can provide more reliable alarming with fewer false reports than visible-light cameras, even during the day. Thermal imaging security cameras offer both alarming capabilities and reliable images – two solutions in one.

THE AFFORDABILITY OF THERMAL IMAGING TECHNOLOGY

Thermal imaging cameras are an affordable option for many businesses that want to ensure they have the best security and protection available.

Prices for thermal imaging cameras have come down substantially in recent years,

to the point where they are on par with regular visible-light cameras, while providing the superior ability to capture images that in many situations regular cameras simply cannot match.

In addition, the total cost of ownership of a security system with thermal imaging cameras is, in general, much lower than a CCTV security system, for two main reasons.

First, a business would require fewer thermal imaging cameras than if deploying CCTV cameras, thanks to the excellent range performance of thermal imaging cameras. Since each camera needs only a mast for mounting, power, and a video feedback



Thermal cameras create images in total darkness.

connection, fewer cameras are required. Business can keep their infrastructure simple, minimizing maintenance costs.

Another area of cost savings is that thermal imaging cameras work perfectly in complete darkness and don't require any lighting to maintain security and protection. Not only is lighting expensive to install, it also requires a great deal of electricity to keep those lights on all night.

THE IDEAL CUSTOMERS FOR THERMAL IMAGING SOLUTIONS

Businesses that wish to monitor multiple areas of their premises would be wise to deploy one or more thermal imaging cameras to provide the best protection against potential intruders, especially at night, when visible light is either low or nonexistent.

In short, any business that wants to achieve the maximum level of security and protection of their intellectual and physical property should consider deploying a thermal imaging solution.

Further information on thermal imaging cameras and this application can be obtained from:

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