

## **Thermal Imaging: Nowhere To Hide!** **The Thermal Revolution is under way!**

I can remember sitting in a meeting over 20 years ago in Langley, Virginia discussing that one day there could be video sensors capable of seeing clearly in total darkness, through dust, smoke and fog! I also remember someone mentioning that if a camera did have that capability it would cost a small fortune to make and to buy. Well that day is upon us, but thankfully the sensors don't cost a small fortune.

It is amazing that the technological breakthroughs that change the very nature of an industry happen before anyone takes notice of them – even people who think that they are on the forefront of technology. A good example of this is the point and shoot CMOS digital cameras that we all now take for granted. It wasn't all that long ago that their cost was high and their performance wasn't nearly as good as film. However, because of their ease of use, instant picture review (gratification) and the ability to quickly email and share the pictures, their volumes increased and their production costs decreased. Now they have replaced pretty much all film cameras and put the once great instant picture company into a tail spin. By the way, I wonder what Kodak and Polaroid were thinking along the way to now?

Here is the news folks: a paradigm shift is now underway in thermal sensor technology and it is forever going to change the way video detection gets done. This snowball is rolling and picking up steam and getting bigger every day. This technology has changed the way the security industry gets things done. It has changed the way firefighting gets done. This technology has changed the way we fight our wars. This technology is going to have a profound improvement in the way vehicle traffic is managed thus creating safer and more efficient roads, cleaner air and an overall improved quality of life. This technology is going to be as common as digital cameras in cell phones.

*~Dan Fancher, President/C.E.O.*

All over the world thermal image technology is being utilized in conjunction with traditional CCTV surveillance systems to keep watch over vulnerable areas after dark.

### **What makes thermal image cameras so unique?**

At night there is not a lot of visible light nor enough contrast for a camera to work with so most surveillance camera images will be too dark to make anything out. However, thermal image cameras can give crystal clear video in pitch-black darkness from miles away.



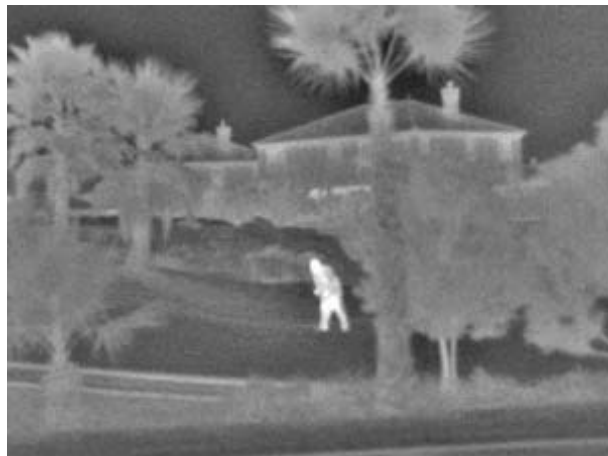
A thermal image camera sees the infrared radiation emitted by an object, allowing it to detect minute changes in heat, without needing any ambient light. Everything emits thermal energy – even things that are very cold; in good or bad weather, day and night. A thermal camera can detect heat energy through smoke, dust, fog, and some sparse plants.

### **What is the difference between infrared and thermal?**

Infrared cameras are sensitive to infrared (IR) radiation in the 250° C to 500° C range, while the range of thermal cameras is generally about -50° C to over 2,000° C. So, for an IR camera to be able to see something it must be over 250° C or it must be reflecting infrared radiation from something that is at least that hot. Night vision infrared devices image in the near-infrared, just beyond the visual spectrum, and can see emitted or reflected near-infrared in complete visual darkness.

Thermal image cameras are becoming a standard for the security industry when paired with traditional surveillance systems to give security professionals a more accurate picture of what is happening. Thermal image cameras can see things that the other cameras cannot – that the human eye cannot; things like a recently parked vehicle or an object having been moved. Their temperatures will be different or have changed which is easily detected with the TI camera.

The thermal image camera is used to detect the presence or absence of certain things – whether it is people coming into a restricted area, an object being left somewhere is shouldn't, or something having been moved or removed from the scene that should be there. For example, in a security capacity, these type of cameras are not made to identify someone's face and features but to notify someone that there is an intruder on the premises so they can act quickly and efficiently to apprehend the criminal.



**You can't hide your heat!**

Other uses for thermal image cameras are quite varied and rather remarkable – from security, to firefighting, to medical and veterinary uses, to building maintenance, to harbor and boat safety and even as a driving aid in personal motor vehicles. With the use of a thermal camera a building inspector can actually see stress fractures that would have gone unnoticed with the human eye. Same with inspecting wiring – a wire may look like it was made correctly but under a thermal camera's eye the wires may be rubbing together and getting ready to fail. Seeing the heat generated from the friction in both of these cases would eliminate costly and potentially hazardous problems.



Check out WTI's revolutionary Thermal Image Sidewinder camera at <http://www.gotowti.com/Products/SidewinderSeries.htm>.

~K. McMillan, WTI

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