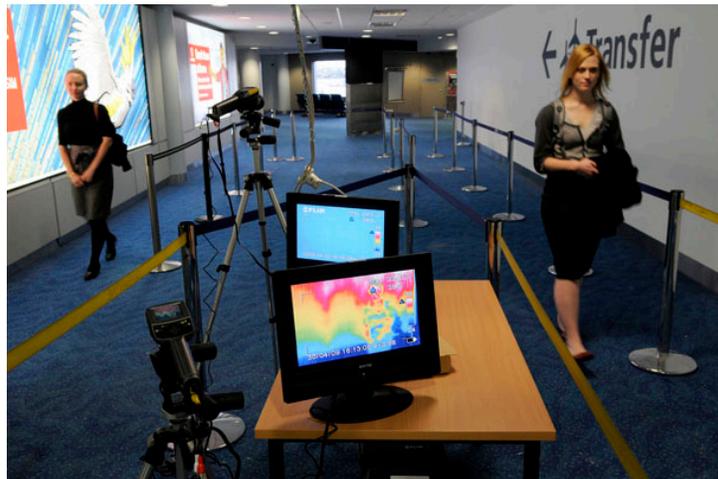




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## **Infrared Camera Systems Can Help Stop the Spread of Deadly Diseases such as Ebola and SARS**

Infrared cameras can be used to detect people who may have a fever, a symptom of Ebola and other viral diseases, and alert officials to pull that person aside for further screening. The person in question can then be checked with an oral thermometer or other device to see if a fever is present. Further screening may include answering a questionnaire or taking a blood test. An infrared camera only detects an elevated surface temperature (not the disease itself) which may or may not be caused by fever. It must be properly calibrated and the user properly trained to achieve accurate results. Since infrared systems are noncontact and nonintrusive, they are highly desirable for mass screenings of potentially infected passengers.



Passengers being scanned at Sydney airport in 2009 during H1N1 virus outbreak

Dr. David Pascoe, an Auburn University professor of kinesiology, recently said in the school's online news source, *The Newsroom*, that the United States is not meeting international standards for fever screening in airports. Dr. Pascoe is the U.S. delegate on the International Standards Committee for Thermal Imagers for Human Temperature Screening. He was quoted as saying "we need to be measuring a person's core temperature with infrared cameras which the current screening with lasers does not do." He goes on to state that the screeners seem to be taking readings from various locations in which large differences in temperature could be observed over a small surface area. A measure adopted by the Committee in 2003 called for an infrared camera to be focused on a person's full face in order to image the area above the nose and between the eyes (inner canthus) which is the most reliable indicator of core temperature, more accurate than just randomly measuring skin temperature which might be elevated for any number of reasons. In order to reduce delays, Pascoe recommends passengers be scanned while going through customs.

The system is usually set to alarm on 101 F (38.5C) or above which is considered the temperature threshold for illnesses such as Ebola. These cameras are routinely used internationally; many were installed in Asian airports to screen passengers during the SARS and H1N1 flu virus outbreaks and are now showing up in Africa and Europe to help stop the spread Ebola. Passengers must remove glasses which would prevent their tear ducts, the hottest part of the body, from being included in the scan. The wavelengths in which these cameras operate, typically in the 2 – 14 micron range, cannot penetrate glass. Also no hats; they can retain heat.



IR Fever Scanner display. Passengers are told to remove hat and glasses and to stand still. A red light and audible alarm signals screener that a passenger's skin temperature is elevated above a set level. That person is pulled aside for further screening to see if there actually is a fever present.

The Infrared Cameras Inc. (ICI) Fever Detection System can meet the needs of airport and other terminals where passenger screening is desired by providing unmatched sensitivity and accuracy. ICI's thermal imaging cameras can measure a person's body temperature to the hundredth of a degree. The company's cameras were used in China during the SARS outbreak and have now been sent to West Africa to help detect fever there. IR Fever Scanner software provides real time radiometric data stream directly to your hard drive or a portable device. Available cameras include the ICI 7320 P-Series infrared camera which offers a sensitive 320 x 240 radiometric imager with overall dimensions roughly the size of a business card. The ICI 7320 operates on 1 watt of power via USB connection. The ICI 9320 P-Series infrared camera is a 320 x 240 radiometric imager with less than 2 cubic inches in overall dimension. The ICI 9640 P-Series infrared camera offers unmatched image sensitivity and accuracy in a 640 x 480 radiometric imager. With less than 5 cubic inches in overall dimension, the 9640 fits in the tightest of areas.



ICI 9640 P-Series IR Camera with an overall dimension of less than 5 cubic inches.

Each of these cameras operates on less than 1 watt of power, via a USB 2.0 connection, providing real time radiometric data streamed directly to any desktop, laptop, tablet or embedded system. Windows and Linux software, drivers and SDK are available for any and all custom applications. These infrared thermal imaging cameras can be mounted in a number of available ICI enclosures for any environment.

Infrared Cameras, Inc., located in Beaumont, Texas and founded by owner and CEO Gary Strahan, is only one of two infrared camera manufacturers that has FDA 510K clearance to market infrared cameras as medical devices and to sell them overseas. All ICI P-Series cameras

have FDA 510K clearance and can be used in other medical applications if no longer needed in passenger terminals.

The key to getting reliable, repeatable results lies in the correct installation and use of these systems. It is evident that many camera installations are incorrect, having problems such as: poor camera resolution, poor focus, subjects too far from camera and cameras directed at groups of people instead of scanning individuals. The subject's face should fill most of the camera's field of view, allowing enough pixels in the target area (inner canthus) to differentiate between a healthy person and someone with a fever. It has also been shown that changes in air temperature and humidity may affect surface temperature readings while core temperatures remain unchanged. Room environment must be controlled where the screening is taking place.

Some infected individuals may try to slip under the alarm threshold by taking fever reducing medication and splashing their face with cold water. Also it may take several days for a recently infected person to develop a fever, commonly known as the incubation time. Additionally, still infected persons may have regained a more normal core temperature following a period of high fever.

Despite these problems, infrared camera systems properly installed, used and maintained, can reduce the risk of infectious diseases such as Ebola and SARS being rapidly spread around the world. In fact, some U.S. authorities feel that fever screening may reduce the spreading of these potentially pandemic diseases by as much as 50%. Better techniques, along with following strict protocols regarding installation and usage could reduce that percentage even further.