APPLICATION STORY

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FIGHTING FIRES OVER THE INTERNET WITH FLIR

Combining FLIR thermal imaging with a remote-controlled firefighting system, Detroit-based Watchdog Security wants to stop hot spots before they catch fire.

Watchdog Security founder Brad Gladstone is no stranger to the devastation industrial fires can cause. His company in Detroit, Mich. installs high-end, commercial IP security camera systems in hazardous locations, such as scrapyards, shredder facilities, and oil wells, where highly flammable materials can catch fire at any moment.

"You've got to understand, they're shredding vehicles that have gas and oil in them," Gladstone says. "This process involves tremendous friction, so imagine a little piece of heated metal going into the fluff that was a car's carpet, ceiling, upholstery, etc. That residue, as a rule, is soaked in oil, gas and anti-freeze, which can cause a fire to fester for 60 hours."

Gladstone says that while standard CCTV security cameras with video analytics can identify fires once they become visible, he wanted to design a device that would both detect and extinguish small fires on the spot.

Watchdog Security constructed on a mobile fire suppression unit called the Fire Rover. The device utilizes a thermal imaging camera to detect heat and a self-contained system of tanks that disperse powerful firefighting foam. But what makes the Fire Rover a true game-changer is that it can be remotely controlled over the Internet—making it perfect for dangerous or difficult-to-reach locations.

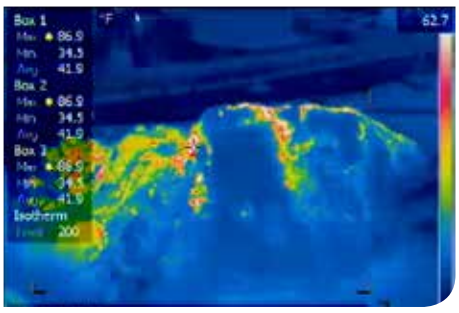
FLIR THERMAL IMAGING THE KEY

Gladstone says what made the Fire Rover possible was the release of the FLIR A310f thermal imaging camera. Unlike CCTV cameras, the A310f detects heat energy that is invisible to the naked eye. With a resolution of 320 x 240 pixels, the camera can easily identify the rise in temperature of a smoldering fire.

The A310f has extensive alarm functions and can automatically send analysis results, IR images and additional data as an e-mail using Modbus TCP/IP or EtherNet IP. The A310f has a fixed 25° lens and outputs both PAL and NTSC composite video. And because

FLIR A310f thermal imaging camera.

The FLIR A310f is the essential component of the Fire Rover system.



The FLIR A310f thermal imaging camera easily detects hot spots before they have time to cause dangerous fires.

During a controlled demonstration of the Fire Rover's firefighting capabilities, the Watchdog Security team set fire to jet fuel in open metal bins. The FLIR A310f thermal camera instantly detected each fire, triggering a visual alarm (marked in red above). An operator using a laptop then aimed and released the Fire Rover's fire-fighting foam, extinguishing the fires in seconds.

the A310f ignores visible light, it works equally well day or night.

"When we were testing, there was somebody 250 yards away with a cigarette, and the FLIR camera was picking that up, letting us know that there was heat over normal temperatures," said Gladstone. "The accuracy of this camera is truly amazing."

Paul Czerepuszko, the Director of Automation Business Development at FLIR, says many companies rely on flame detectors to provide fire security because they cost less. However, once a fire gets started, that type of detection might be too late.

"The nice thing about the FLIR A310f cameras is that they are calibrated temperature measurement devices," he explains. "That means we can set thresholds on different materials and assets so we can track heat before it goes to ignition."

MOBIL FIREFIGHTING UNIT

With the detection issue solved, Gladstone and Dusing worked with a local engineer to design the foam dispersion system. They needed something both rugged and portable. They managed to fit a collection of tanks filled with nitrogen gas, water, and liquid foam agent into a standard metal shipping container. Then they raised a 28-foot pipe on the outside with a nozzle and HD camera affixed on top.

"It looks like a giant water cannon," said Dusing.

The moment the A310f senses a temperature above a designated level, it triggers the IP encoder, which sends an alarm to Watchdog Security's national monitoring station, based in Pennsylvania. An operator logs into the given IP address to view the video feed from the A310f and HD cameras, as well as account information and contact numbers for local authorities.

If needed, the operator can activate and control the Fire Rover using a joystick, watching the results in real time on screen. The Fire Rover contains a fire-fighting liquid concentrate called FireAde 2000 that is certified to fight both Class A and Class B fires, which include ordinary combustibles (wood, paper and trash) and flammable liquids. When mixed with water, ten gallons (37 liters) of FireAde 2000 concentrate produces 200 gallons (757 liters) of finished foam. The nozzle can spray the foam up to a distance of 150 feet for approximately 20 minutes.

HUMAN ELEMENT CRITICAL

Watchdog Security's operators are trained to carefully analyze the information from both the A310f and the HD cameras before they employ the Fire Rover so they don't confuse the heat signature of a genuine fire with that of an engine of a passing bulldozer, for example. All of the activity is captured on video, watermarked, and archived in the cloud for potential insurance claims and court cases.

"We program the system to look for fires of a certain nature," Dusing explains. "So, if we're guarding a scrap pile, then we'll add programming to improve its accuracy."

While the Fire Rover is not intended to replace professional firefighters, Gladstone believes it will offer the same peace of mind sprinkler systems do inside office buildings and warehouses. He expects the Fire Rover will make a big difference not only in the recycling industry, but also in logistics operations like distribution centers, truck yards and port facilities.

"My hope is that the Fire Rover will eventually change their insurance rates," Gladstone said.

MAKING REMOTE FIRE-FIGHTING WORKABLE

Dusing says the ability to add fire-fighting to detection is a unique capability for a company like theirs.

"There may be other companies using FLIR cameras for monitoring offsite, but we're the only ones using it for fire extinguishing," he says. "We trust the name FLIR because of how widely it's used, plus they had all the technical specs we needed to connect their equipment to ours. With the information it gives us we know how to fight a fire and where to aim the foam."

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