



Discreet Detection: Why Backpack Radiation Detectors Should Be Part Of Your Public Safety Arsenal

EXECUTIVE SUMMARY

For the men and women serving on the front lines of public safety and law enforcement, preparedness and awareness are often their guiding principles in detecting and responding to threats. However, as technology continues to advance year after year, so do the tactics of adversaries who wish to harm us.

In the 20th century we feared formal declarations of war by rival powers half a world away. Today, we face pockets of motivated, asymmetrical combatants who can utilize homemade and high-tech weaponry to launch devastating attacks within our borders. Mass casualty events such as the Boston Marathon bombing, the Tokyo subway sarin gas attack, and the 2001 anthrax attacks are all examples of the unconventional tactics adopted by terrorists and other 'bad actors' who hide among civilians before launching their deadly operations. Those who serve in key public safety roles need to stay one step ahead of these evolving threats to protect lives and livelihoods.

The threat of radiological events continues to be a growing concern, especially when at mass gatherings and in communities surrounding nuclear power facilities. It's imperative that organizations and agencies, whether public or private, have greater capabilities and a wider range of technology available to detect and respond to these potential threats.

A key solution to these security challenges is radiation detection backpacks. These devices can be used to protect lives and livelihoods by enhancing mission capabilities by providing first responders with a tool to monitor larger areas quickly, discretely and effectively.

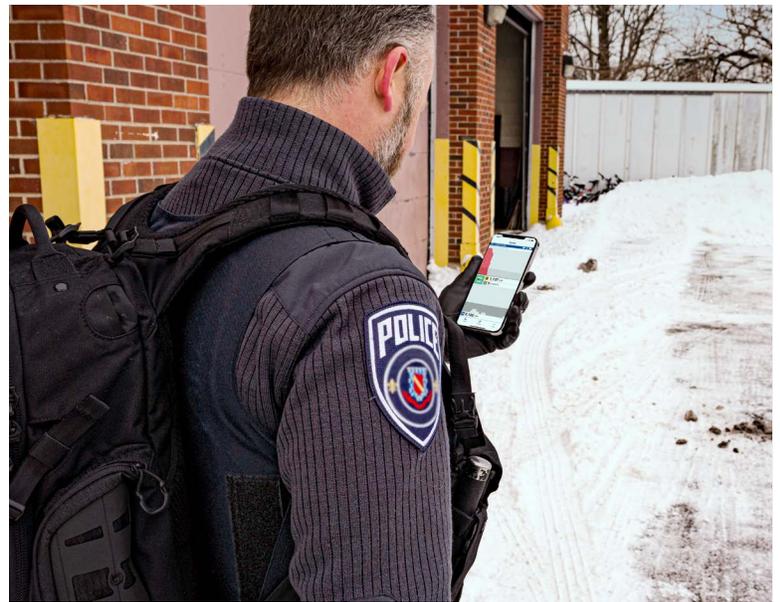
This whitepaper will discuss:

- How radiation detection backpacks can provide a greater level of security and deterrence of radiological events.
- How radiation detection backpacks can be deployed to compliment handheld detectors.
- How the FLIR identiFINDER R700 addresses the challenges of backpack deployment and can provides customers with solutions.

Why Radiation Detector Backpacks?

Radiation detector backpacks are designed to detect gamma-emitting radiation for broad-area radiological monitoring missions. These devices do what other handheld detectors can't – they provide first responders with the flexibility and mobility to scan large areas for radiation quickly.

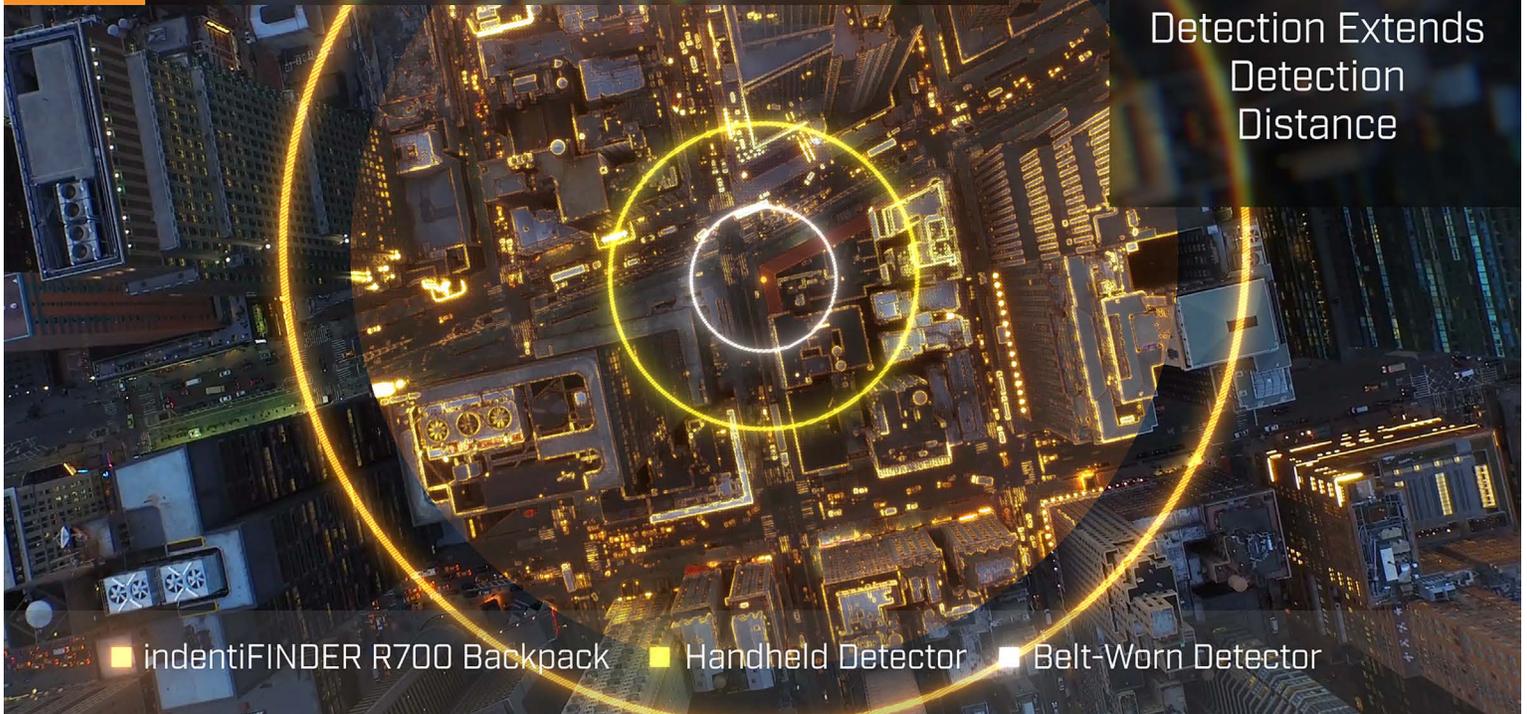
Already public safety agencies across the globe are adding backpack detectors to their detection arsenal. In [2019 the Wayne County, Georgia](#)





identiFINDER R700

Scalable Covert
Radiation
Detection Extends
Detection
Distance



■ identiFINDER R700 Backpack ■ Handheld Detector ■ Belt-Worn Detector

— one of 50 Peach State counties within 50 miles of a nuclear power facility — purchased backpack detectors for its sheriff's department and put their deputies through backpack training. [In 2018 the California National Guard](#) worked with the Orange County Sheriff's officer to deploy backpacks as safety measure at the three days Great Pacific Airshow in Huntington Beach.

Abroad, [Jamaica has utilized backpack technology](#) as part of its strategy to ensure safety and security in the operation of radiological facilities including the Caribbean's only nuclear reactor. [The International Atomic Energy Agency has worked with Malaysian authorities](#) to establish a pool of radiation detection equipment including backpacks for use at large events in Asian and the Pacific.

In short, backpack detectors take radiation detection capabilities to the next level by providing unmatched range and precision to first responders providing security at mass gatherings or monitoring large areas around facilities that employ ionizing radiation and nuclear technology.

How Backpacks Compliment And Enhance Detection Strategies Utilizing Handheld Devices

Many public safety departments currently utilize various types of handheld instruments as part of their radiation detection strategy. Through years of working with our customers, FLIR has learned that no single product can meet all the various applications for handheld systems. Different applications require different detector sizes and sensitivities. Some applications require smaller, more rugged devices while at other times, increased sensitivity outweighs the importance.

For many years, Personal Radiation Detectors (PRDs) have been the main front-line tool for initial detection and interception of radioactive material. They perform this function particularly well with an exceptional cost-to-performance index that allows for broad deployment. However, pagers cannot determine whether a detection is a true threat or of a benign nature such as from a medical patient, industrial source, or just normally occurring background radiation.

Spectroscopic Personal Radiation Detectors (SPRD) devices add the

necessary spectroscopic capability to make a determination regarding the nature of the source. SPRDs advance a radiological event from "alarm and wait" to "identify and take action." This could mean instant adjudication for an alarm triggered by a patient who has recently had a medical procedure, saving both time and the cost of an unnecessary escalation. By supplementing PRDs with SPRDs, a deployment program can gain these key operational advantages of deploying a compact, lightweight instrument.

Radio Isotope Identification Device (RIID) can further supplement these devices by serving as a secondary verification tool at the site of a radiological event and can also be deployed on the frontline as needed. These instruments typically use scintillation and semi-conductor detector materials, some cooled for performance, and are more sensitive than PRD and SPRD instruments.

Backpack detectors take the radio isotope detection to the next level with scaled up technology. They can provide person-borne, wide range screening with increased sensitivity that allows operators to cover more ground quickly. This is the perfect technology to compliment handheld devices when providing security at large events or mission that require the monitoring of vast areas.

Why the Next-Generation FLIR identiFINDER® R700 is the Right Choice for Backpack Radiation Detection

FLIR has a long history providing customers with award winning radiation detection devices. Building on the technology of the award-winning FLIR identiFINDER® R440, the R700 Backpack Radiation Detector is the latest addition to the identiFINDER R-series and the company's first backpack radiation detector. The identiFINDER R700 is the most sensitive radiation detection system in the FLIR arsenal. When coupled with FLIR's best-selling identiFINDER RIDs or SPRDs, customers have a comprehensive person-borne radiation screening system for personal protection, point detection, and wide-area screening.

The device offers increased speed for identifying radioactive threats

using advanced spectroscopic algorithms and detection techniques. With the help of a mobile device, the R700's flexible and portable design allows users to configure the system as either a backpack or a stationary device, enabling mission sets from wide area searches to temporary checkpoints. It's also smaller and more versatile than previous generation devices, allowing to be concealed in a wide variety of carrying cases that will not raise suspicious from the public.

After vigorously testing several different radiation detection backpacks, the Department of Homeland Security (DHS) selected the identiFINDER R700 as part of its Helium3 Alternative Implementation Backpack Program (HAIBP). DHS's decision to purchase the new device is a strong indication of the confidence that the agency has placed in the capabilities and versatility of the device.

There are several key features that set the identiFINDER R700 apart from the competition:

Durability

The R700 boasts a rugged, yet ergonomic and weatherproof IP67 design for all day and all-season wear. With a weight of around 20 pounds and long battery life of about 20 hours, the R700 will provide users with the technology necessary to endure extended detection missions.

Accuracy

The identiFINDER R700 can detect harmful neutrons with NaI or count them with FLIR's dual-mode NaIL detector without the need for an additional neutron detector. A large 2" x 4" x 8" detector allows for rapid detection and identification of even the smallest radiation sources. Source-less quantum gain stabilization improves data collection, resulting in a reduction of false positives.

Discreet Detection

As with all FLIR radiation systems, the identiFINDER R700 provides the capability to do so in real-time and on-demand. The instrument can be monitored and controlled remotely using the mobile app. Built in wireless communications and a robust API allow integration with user-deployed networks. The user can monitor large areas from a normal sized backpack with a standard mobile device to avoid raising any suspicion or alarm from the general public at mass gatherings.

Enhanced Capabilities

An upcoming R700 commercial variant will feature the patented EZ Finder mode, which allows the wearer to easily locate the radiological threat, by pinpointing the source quickly and accurately. In addition, a tethered display will also be available to provide a radio silent option for use when the wireless interface is not optimal, or during highly sensitive missions.

Value

Having the right tool for the job is important for any mission, and FLIR has priced the identiFINDER R700 within reach of most customers. While the R700 backpack can quickly cover significantly larger areas than handheld devices, it's available at a price point only slightly above a well-equipped RID handheld device. This provides users with tremendous value and flexibility to add the R700 to their detection arsenal to complement current technology.

Compatibility

When coupled with FLIR's best-selling identiFINDER RIDs or SPRDs, customers have a comprehensive person-borne radiation screening system for personal protection, point detection, and wide-area screening.

Conclusion

Radiation detection requires sophisticated training and technology beyond simple visual inspection and one's senses. For a threat that flies under the radar, it must be met with the right tools that can operate under the most critical circumstances. Whether you are a local law enforcement agency, the federal government, or a private organization, a radiation detection backpack such as the FLIR identiFINDER R700 is a must-have device in your repertoire.

No one wishes to confront a serious radiological event, but the R700 can protect lives and livelihoods by immediately detecting potential threats if – and when – the situation arises.



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