THRUVISION
PEOPLE-SCREENING

Improving Aviation Security using Passive Terahertz Technology for High-Throughput People-Screening

A Whitepaper from Thruvision

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Visualizing the threat

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Improving Airport Security Using Passive Terahertz Technology

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Executive Summary

The two most widely deployed technologies, walk-through metal detectors and active millimeter wave body scanners, do not address the full range of people screening requirements at airports.

***Passive terahertz technology*, can fill these gaps and improve airport security and the experience of all airport users.**

- **Facilitating "virtual" pat downs (i.e. non-intrusive, non-physical) secondary screening**
- **Improving security in the public, "pre-checkpoint" areas**
- **Screening of employees**
- **High-throughput or "segmented" passenger screening**

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Trends Impacting Airports and People Screening

US airports are facing a surge in the number of people they need to accommodate, and in many cases, security screen. That will drive an increase in the number of airport employees, contractors and airline crews at airports. Many airports are straining to handle these increasing volumes – they cannot build additional terminal space fast enough.

To avoid ever-lengthening security queues, a new approach is needed to protect airports and aircraft from weapons and explosives concealed in clothing, and to ensure the smuggling of other illicit or stolen items is made as difficult as possible. This new approach recognizes that people security screening is not a "one size fits all" activity and that the type of screening required varies on the airport population in question.

Furthermore, the type of screening required varies, depending on the airport population in question.

Population	Description	Screening Requirements
Infrequent Travelers	Not enrolled in "Trusted Traveler" program	Significant. Currently go through active millimeter wave body scanner
Trusted Travelers	In TSA Pre-Check or other program	Moderate, due to vetting process. Currently go through metal detector.
Special Needs Travelers	Cannot be screened using current technology	Very Significant. Require physical pat down.
Employees	Have access to secure areas of airport	Very Significant. Must balance operational requirements, security.
Pilots and Crew		Minimal, due to prior vetting.

Limitations of Metal Detectors and Checkpoint Body Scanners

Metal Detectors

Handheld and walk-through metal detectors – are inexpensive and easy to deploy. They can be effective for detection of guns and knives. However, they cannot detect non-metallic threats such as plastic or liquid explosives. They require users to divest metallic items prior to screening, and due to high false alarm rates, they can require a secondary physical (and highly intrusive) pat down.

Active Millimeter Wave Body Scanners

These systems can detect a wide range of concealed items, including non-metallics. But they have high false alarm rates, requiring extensive divestment procedures and secondary searches, and as a result, are slow (maximum throughput of about 200 persons per hour). They raise privacy and safety concerns because they use ionizing radiation. They are immobile, have a significant physical footprint, and require fixed power infrastructure for deployment.

Thruvision is proven. It has been successfully deployed for employee security screening by organizations like Sony and shown to reduce theft by up to 80%

Maximum Screening Throughput Thruvision vs. Airport Body Scanners

750 Thruvision

200 Airport Body Scanners

Thruvision's Passive Terahertz technology can provide over 3x the maximum throughput of airport body scanners

Passive Terahertz Technology and Airport People Screening

Thruvision, a technology company based in the UK and US, has developed the first high throughput, stand-off airport people screening system, incorporating a new people screening technology, advanced passive terahertz imaging.

- **Tested and proven:** Over 200 Thruvision systems have been deployed in countries worldwide. The system has been extensively tested and deemed effective by the US Department of Homeland Security for people screening applications.
- **Safe and Respectful.** Unlike active millimeter wave imaging technology, passive terahertz technology does not emit radiation, does not require people to raise their arms or be scanned in a narrow enclosure, and does not generate images of anatomical details – only of the concealed object. It is completely safe and may be used to screen any person, including pregnant women and people with pacemakers.
- **Stand-off, non-intrusive threat detection.** The technology can identify concealed objects at distances up to 25 feet, in real time. This gives airports significant flexibility in how to deploy the system, and the time and space to take action to stop potential threats from reaching their target.
- **Comprehensive real-time threat visualization.** Thruvision detects any type of material meaning non-metallic threats such as IEDs, plastic explosive, ceramics knives and bottles of acid are covered as well as metallic items like guns. Thruvision also "visualizes the threat" - the operator can see the size, shape and location of the concealment in real-time allowing immediate action to be taken.
- **High Throughput Real Time Threat Visualization.** Thruvision can screen people as they walk and because operators can see items in clothing, passengers do not need to divest personal effects such as wallets, phones or keys from pockets. Airport testing has shown 750 people per hour is easily achievable with minimal inconvenience.
- **Mobile and Flexible.** The Thruvision system is lightweight and compact. It does not require special power or other infrastructure and can be rapidly moved based on customer requirements.
- **Low total cost of ownership.** The system costs significantly less than airport body scanners, and with few moving parts, is easier to operate and maintain as well.

Airport Applications for Passive Terahertz Technology

"Virtual", Non-Intrusive Pat Downs

The inability of airport body scanners to screen persons with disabilities, the elderly, and people with special needs means personnel must conduct intrusive (and very unpopular) physical body searches or "pat-downs".

Thruvision passive terahertz technology reduces physical pat-downs. If a traveler can not be screened using a body scanner, the Thruvision system can determine if there is an item concealed on the person – in a non-intrusive and respectful manner.

Screening of Airport Employees and Contractors

Employees need to be periodically screened, not only for weapons but also for smuggled or stolen goods, narcotics and alcohol. Screening must be done in a respectful manner and must not interfere with airport and employee productivity. The Thruvision system can detect any concealed item – metallic or non-metallic; it can screen up to 2,000 persons per hour; it can be deployed on an as-needed basis; and it is non-intrusive.

Security for Public, "Pre-checkpoint" Areas of Airport

As incidents in Belgium and Paris demonstrated, "non-secure" areas of airports can be targeted by terrorists. Metal detectors and airport body scanners are not practical in these environments. By contrast, passive terahertz stand-off people screening is well suited for this application, which is a natural extension of its successful current deployment for event and public transit security.

High-Throughput, Segmented Passenger Screening

The number of both "trusted travelers" and conventional travelers is increasing and, in some cases, overwhelming current check technology. Airport security needs to move to a more segmented approach, that enables higher passenger throughput and improved security.

Thruvision's high throughput, real-time stand-off threat detection capability would enable such an approach. For example, the system could be used to screen trusted travelers much faster than metal detectors.

Conclusion

Thruvision's Passive Terahertz Technology offers proven new capability to improve people security screening in airports. Thruvision offers significantly higher passenger throughput rates, it addresses the vulnerabilities of existing security technology being used and it provides much greater operational flexibility. Airport security experts owe it tho themselves to further investigate this exciting and powerful new technology.

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About Thruvision

Thruvision is the leading provider of next-generation people-screening technology. Using patented passive terahertz technology, Thruvision is uniquely capable of detecting metallic and non-metallic threats including weapons, explosives and contraband items that are hidden under clothing, at distances up to 25ft. Addressing the growing need for fast, safe and effective security, Thruvision has been vetted and approved by the US Transportation Security Administration. More than 200 units have been deployed worldwide over the last five years for applications including mass transit and aviation security, facilities and public area protection, customs and border control and supply chain loss prevention. Thruvision has offices in Washington DC and near Oxford, England. For more information, please visit www.thruvision.com.