

Trace Explosives Detection Vehicle Portal

The Need

Vehicle bombs are one of the most prevalent tools used by terrorists. Protective forces at high-security locations such as embassies, federal buildings, military installations, and at special events need to perform speedy checkpoint screening of vehicles for high explosives. Most vehicle screening tools available today use radiation-based technology that requires the driver and passengers to exit the vehicle before scanning it, which reduces throughput.



The Vehicle Portal accommodates drive-up access for vehicles for explosives detection testing.

The self-contained trailer contains compressed air, computer equipment for controls and analysis, the sample collection, preconcentration and analysis module, and hydraulics for adjusting the height of the module to the size of the vehicle



Capability

Sandia National Laboratories has developed a Trace Explosives Detection Vehicle Portal prototype portal that screens vehicles for explosives, based on unique technology that has been used successfully in our personnel portal. The system uses engineered air flows to remove vapor or trace particle contamination from a vehicle, a patented chemical preconcentrator to collect this material, and a commercially available ion mobility spectrometer to detect and identify the explosive. The system controls will produce an audible and visual alarm when explosive material is detected. A computerized data acquisition system records the information.

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A previous field test of the vehicle portal prototype used two modules (driver's side door and back of vehicle) to test for explosives

Features

- Screens a vehicle in less than 3 minutes (2.5 minutes to position the vehicle and sampling module, plus 20 seconds for sample collection and detection)
- Screens a vehicle without removing cargo or passengers
- Screens vehicles that vary greatly in size
- Self-contained trailer allows mobility and storage against adverse weather conditions
- One-person setup and operation
- Detects trace amounts of contamination for several common high explosives
- In commercial production, will cost approximately \$250,000 to \$500,000, in contrast to vehicle portal bulk explosive screening systems that can cost in excess of \$1,000,000
- Can be configured to screen for illegal drugs

Sponsors

This work was funded originally by the Technical Support Working Group and the Department of Energy Office of Safeguards and Security (now the Office of Security.) The Defense Threat Reduction Agency (DTRA) has continued funding to upgrade and demonstrate the engineering prototype at their Technical Evaluation Assessment Monitor Site (TEAMS) located on Kirtland Air Force Base. Sandia is currently exploring commercialization opportunities.

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