



Air Cargo Security

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Like other technology suppliers that work with the Transportation Security Administration, X-ray equipment manufacturer Rapiscan Systems has sold the TSA more products for baggage than boxes. The Hawthorne, Calif.-based company has a contract to fill up to \$97 million of TSA orders for carry-on baggage screening machines with advanced multi-view technology and its devices are at U.S. airport passenger checkpoints across the nation.

The cargo side of Rapiscan's TSA business is leaner, however. The federal agency this year began testing two Rapiscan cargo screening systems already in use at airports outside the United States, one for large boxes, one for pallet loads of boxes.

"We have been working with the TSA over the past six months or so as it relates to potential technology systems that could be used for air cargo screening," said Peter Modica, Rapiscan's vice president of government programs. "They are coming to our facilities to test a pallet-screening system."

As far as how those tests are progressing, said Modica, "That's for the agency to comment on."

As airlines, forwarders and especially shippers have learned, security is a touchy subject. TSA faces challenging deadlines for broadening its inspection of cargo bound for the bellies of passenger aircraft. Federal law requires that TSA inspect at least 50 percent of all cargo on U.S. passenger flights by February 2009 and 100 percent by August 2010. But there remains sharp disagreement on the law and what TSA and the cargo business must do to meet those deadlines.

While TSA plans to throw more inspectors and canine teams at airport checkpoints ahead of the February 2009 deadline, technology also is expected to play a big role in the agency's stepped-up inspection regimen.

In partnership with private industry, TSA has been evaluating technology in search of systems that reliably detect cargo threats without discouraging commerce. The agency has done considerable testing of cargo-screening machines and devices for possible agency certification and field deployment.

Just six months before the February 2009 deadline, TSA was still testing cargo inspection technologies that it might approve as part of its Certified Cargo Screening Program. The

agency has developed the program to implement the 9/11 Commission Act of 2007, the law passed last year as a way of tightening air cargo security.

TSA long has focused its technological initiatives on passenger terminal security, on its now-ubiquitous tunneled screening machines and explosives trace detection systems for checked baggage and carry-on items.

By contrast, the agency remains in the early stages of evaluating advanced screening technology for cargo, especially for the dense loads that mark industrial shipping, from stacked machine parts to boxes piled on pallets or packed in containers. "None of the technologies thus far is suitable for screening pallets or unit load devices, or containers," said Brandon Fried, executive director of the **Airforwarders Association**, an industry trade group.

Industry figures including Fried fear widespread slowdowns in air cargo shipments could ensue if TSA agents start to conduct significantly more security inspections before the agency can certify and deploy large-scale screening systems for containers and pallets.

"It's not unusual to have a pallet with 300 boxes on it, so one of the areas that we're concerned about, and I am sure TSA is as well, is that there is no technology yet that they have certified or vetted that can screen those pallets," Fried said. "That means you're going to have to take apart each pallet, spread all the boxes on the floor, and do explosives trace detection on each one."

Fried and members of his trade group also are concerned about federal regulations that require freight forwarders to acquire cargo-screening equipment and facilities certified by the agency for off-airport inspection.

TSA has started a pilot program with 13 large air freight forwarders to determine what types of cargo-screening equipment and facilities the industry should have. And although TSA paid for screening equipment installed for demonstration purposes at the 13 freight forwarding companies, others could spend as much as \$100,000 to \$200,000 per location to comply with the Certified Cargo Screening Program, Fried said.

"It's going to be expensive. It's going to be a heavy lift for most small to medium sized forwarders, and there is no federal funding assistance," he said. "TSA pays for it on the baggage side; we see that all the time. Why shouldn't they be paying for it on the cargo side as well?"

Some officials say the agency has advanced its appraisal and acquisition of screening systems for baggage at the expense of cargo.

"One area that has suffered as a result of the intense focus on passenger and baggage screening is research and development of technology to screen cargo," John Meenan, executive vice president and chief operating officer of the Air Transport Association of America, told the House Transportation and Infrastructure Committee's aviation

subcommittee in July. "Other than canines, no technology has been certified to effectively and efficiently screen cargo."

Criticism and cash aside, TSA still expects to meet the requirement to inspect 50 percent of cargo on passenger planes by early next year. Inspecting 100 percent of belly cargo by 2010 may be harder to achieve, however, if major pieces in the agency's security puzzle are not in place by then.

A TSA spokeswoman said the agency expects to be testing cargo-screening technologies for possible certification and deployment two years from now, when its mandate to screen all belly cargo takes effect. "The tests are going to go on into August of 2010," said TSA spokeswoman Sterling Payne.

TSA has a list of candidate technologies for cargo screening in various stages of testing and evaluation but it was too soon to tell whether any of those would win agency certification by February 2009. "It's a little premature," she said. "We need more testing and data from the field before that will occur."

One of the biggest developments this year in TSA-funded testing of screening technology has been initiation of tests on two competing products designed to scan pallets of cargo.

"Since spring, we have added wide-aperture X-ray machines for pallet-size inspection," Payne said. She declined to identify the two manufacturers behind the machines. "This is kind of their initial stage of being tested [by TSA]. Some of them are being used in other venues," she said.

TSA also has taken steps to certify cargo screening equipment, facilities and procedures for air forwarders in hopes of relieving airport congestion. "We're trying to kind of push the screening back upstream so it's not [all] happening at the airport," Payne said, "and by virtue of doing that we actually open up opportunity for the smaller freight forwarders to be able to have their screening done at the airport."

Screening belly cargo that passenger airlines bring in from foreign countries another matter.

A top TSA executive has told Congress the 9/11 Commission Act of 2007 doesn't apply to cargo originating outside the United States. "What we're talking about with this program applies not only to domestic carriers but foreign carriers. But it's the shipments that originate in the United States that we can screen," John Sammon, assistant administrator of TSA, testified. He also told members of the U.S. House Committee on Homeland Security that TSA may be unable to meet its statutory August 2010 deadline for full screening of belly cargo.

That has been drawing fire from a Democratic-controlled Congress that has been seeking to have the agency move away from what TSA had been calling a risk-based approach to cargo security.

"We remain concerned about TSA's implementation of the 100 percent screening requirement," Bennie G. Thompson, D-Miss., chairman of the Homeland Security Committee's transportation subcommittee, wrote in a July 31 letter to Kip Hawley, assistant secretary of TSA. Seven Democrats on the subcommittee including Thompson signed the letter, which also criticized Sammon's statement that the 9/11 Commission Act did not apply to inbound belly cargo.

Citing a report by the federal Government Accountability Office, the lawmakers complained, "TSA's progress in developing a screening process for inbound cargo has lagged."

Private-sector contractors competing to equip TSA with advanced cargo screening systems say the agency is focused more on testing such systems than on procuring or deploying them.

"They are still very much in the testing phase of this and trying to finalize the screening technology list," said Bill Frain, senior vice president for sales and field operations at Woburn, Mass.-based [L-3 Communications](#).

A supplier of baggage screening machines, L-3 also has cargo screening systems that TSA has been testing for the last two years. "This is a process that is ongoing," Frain said. "Wide-scale deployment has not happened."

L-3 has sold a variety of X-ray scanning machinery for air cargo inspections in markets ranging from Mexico, Italy and Poland to Kuwait and Saudi Arabia. In addition to fixed X-ray stations with built-in cargo conveyor belts, "we have mobile trucks, and we have gantry systems, which are kind of like a car wash," Frain said.

L-3 has installed cargo screening systems designed to scan containers at airports in such foreign cities as Amsterdam and Bangkok.

But he said what TSA wants to find are objects so small and hidden amid so much cargo that detection is neither easy nor easy to afford. "I think what the TSA might be trying to do is be able to detect something in that large container that might be a pound or two pounds of C-4 amidst a whole bunch of clutter: automotive parts, flowers, liquids, fruits," Frain said. "That's the hard part to do today with existing technologies."

The primary TSA supplier of checkpoint baggage X-ray machines and explosives trace detection gear, [Smiths Detection](#) is working with the TSA to test a pallet-screening system originally designed for ocean cargo and adapted for air cargo.

"I can't tell you which models we are testing with TSA, but we are in the process of testing different models of large-opening X-ray systems that could X-ray entire pallets," said Mark Laustra, a New Jersey-based vice president for homeland security at [Smiths Detection](#).

"TSA has shown a lot of interest in those machines, because the industry is calling for those machines. The big challenge is the volume of cargo, and wouldn't it be nice to be able to screen whole pallets," Laustra said. "That's the Holy Grail: to keep commerce moving and screen these large volumes of cargo quickly."

In addition to testing candidate technologies, TSA also is determining the relative merits of various cargo-screening systems and how they would work best in combination.

"I think the real test for the TSA is the application," said Peter Harris, vice president of strategy and development at Analogic in Peabody, Mass. "How they do it? How they integrate that into an airport. Do they do it outside the airport? Do they do a separate area for cargo? In my mind, it's what we call a 'concept of operations.' That's the thing they still have to define."

Harris said TSA has done a good job of encouraging the advance of screening science.

He said innovations in screening technology, including some funded by TSA, have helped Analogic and other companies that sell security systems to the agency. "Through the TSA's (research and development) we've made really revolutionary advances in the technology, so we have not been standing still," he said. "The same thing goes for the other candidate technologies."

Analogic manufactures the eXaminer baggage screening system [L-3 Communications](#) has sold to TSA, and it is developing two higher-speed baggage screening machines. Analogic also designs screening machines that display images created with computed tomography. With CT-based technology, "you get automatic detection of explosives, and we do that through certified algorithms that we test with TSA," Harris said.

But TSA has been in no hurry to adopt Analogic solutions for cargo. Consider how long ago the agency tested Analogic's Connecticut-based systems in cargo screening applications.

"We did a number of pilot programs three or four years ago. The results were pretty good," Harris said. "At that time, TSA was looking at cargo, but not with the focus it had on checked luggage or at the checkpoint. The bias has been toward checked luggage first, and now they're looking at the carry-on. And, of course, Congress and others have said: What about the cargo?"

"Cargo has always been the stepchild of the aviation industry."

Another company that could benefit from security modernization in air cargo is Houston-based Geovox.

The company manufactures human-heartbeat detection systems that can identify the presence of stowaways in trucks and containers. Colin Frazier, director of operations,

said Geovox successfully demonstrated its technology for the first time at a U.S. screening facility on the U.S.-Mexican border in Laredo, Texas, in 2002.

Although the TSA has not yet certified Geovox technology for air cargo applications, the company has studied how to transfer its capability from fixed stations to portable handheld devices, which would speed throughput in cargo applications. Geovox units have been installed to detect stowaways in air cargo at airports in Europe, North America and Asia.

But Frazier would like to see more installed in his home country. In his view, the TSA's focus on finding explosives has overshadowed the importance of stowaway detection.

"I have more units in Europe than I do in the U.S." he said. "It's a fact that the Europeans and even the North African countries are much more aggressive in controlling human smuggling and securing their perimeters and internal checkpoints, they are light years ahead of us, five years at least."