

Secure Tag, a Toronto-based startup, has developed an RFID device it says could be used to both identify and secure airline passenger baggage.

By Mary Catherine O'Connor

Dec. 5, 2005—Air passengers waiting at baggage carousels may worry about whether the airline lost their luggage, but Dave Da Silva, vice president of Toronto-based [D&D Secure Tag](#), says there is a real chance something worse could happen. Thieves, for example, might rifle through their bags, or smugglers might try to use them to transport drugs or other contraband. Da Silva says a thief or smuggler could easily remove the metal zipper-pull padlocks used to secure bags and replace them with similar-looking padlocks, so that owners would not realize the luggage had been opened until after arriving at their destination. Moreover, fliers using these metal locks run the risk of having them forced open by [U.S. Transportation Security Administration](#) security personnel if a bag is selected for inspection and the TSA does not have a key to open its lock.

Da Silva claims such situations could be prevented if a bag were sealed with a Secure Tag lock, a hard plastic rectangular device roughly the size of a domino, containing a passive RFID inlay. Welded to the device is a durable plastic strap, similar to plastic ties sometimes used by police as handcuffs. To attach the tag to a piece of luggage, the free end of the strap is looped through holes in the zipper pulls, in the same way metal padlocks are used to prevent bags from being zipped open. The end of the strap is then inserted into a self-locking channel built into the device's hard plastic housing. To prevent entry into a locked bag by disengaging its zipper track, using a sharp object such as a ball point pen, and then re-engaging the zipper by pulling the two locked zipper pulls over the open portion of the zipper, Da Silva says the Secure Tag could be looped through both the bag's zipper pulls and its handle.



Zipper pulls are used to attach Secure Tags to luggage in an effort to prevent entry into locked bags.

This is how D&D Secure Tag envisions the tags would be used: Airline workers would apply a Secure Tag to each piece of luggage, thereby locking the zipper closed, then encode the RFID inlay with the unique passenger record number airlines currently print as a bar code on a conventional airline bag sticker. To examine the contents of a piece of luggage secured with the Secure Tag, TSA officials would first need to cut the device's strap. After completing the inspection of the contents, the officials would then use a second strap to re-secure the bag. One end of this strap terminates with a wide tab embossed with the words "airport security," while the other end has a narrow tip.

TSA officials would slide the end with a narrow tip through another of the device's self-locking channels, loop it through the zipper pulls, then slide it into the last self-locking channel. This way, passengers would know the bag had been examined and re-secured by airport officials. Because the end of the strap that slides into the self-locking channel has a small notch—something the original strap placed by airline workers lacks—and because the "airport security" tab is too wide to be pulled through the tag's channel, neither end of the security strap can be removed from the Secure Tag once the security strap is in place, even if that strap is cut. To track the individual security straps the TSA will use, and to make it harder for someone to steal or counterfeit them, Da Silva says his company is considering etching

serial numbers into the straps, or even embedding RFID inlays into them.

Da Silva points to the case of a woman convicted of smuggling marijuana from Australia to Bali. The suspect claimed she had not packed the marijuana into her bag, that luggage handlers in Australia must have placed it there and that their cohorts in Bali must not have removed the drugs, as planned, before the bag went through the Bali airport security screening. If the luggage had been closed with a Secure Tag, however, the only way anyone could have hidden drugs inside the main cavity of a piece of luggage would have been by breaking the Secure Tag's strap.

Furthermore, only TSA officials—or, in the case of a non-U.S. airport, officials from its security administration—would have access to the approved straps to reseal the tag after the original strap had been cut to inspect the bag. Because the security strap can't be removed from the tag once it's in place, nefarious baggage handlers intent on stealing goods from bags or supplanting them with contraband would somehow need to obtain security straps from the TSA and also divert bags from the TSA's security inspection process, then reintroduce them with the rest of the bags bound for a flight. If they did this, however, and if the drugs or missing items were later discovered, security officials would have a leg up on finding the criminal parties since the data trail of Secure Tag reads would not track. That's because TSA officials would be taking reads of the tag embedded in the Secure Tags at the time of inspection.

The airline industry has carried out a number of tests using RFID inlays, embedded into paper bag tag stickers, to identify bags and link them to their owners, while the [International Air Transport Association](#) (IATA) has recently endorsed the use of UHF passive RFID devices compliant with ISO standards for such applications (see [IATA Approves UHF for Bag Tags](#)). A trial run by the TSA this year showed that UHF tags could be read in airports in Asia, North America and Europe, and with a higher success rate than the bar codes printed on bag tags (see [EPC Bag Tagging Takes Wing](#)).

Still, Da Silva asserts that because the RFID inlay inside the Secure Tag is protected by an impact- and static-resistant housing, it is more protected from shock and static than are the inlays embedded in bag tags. The Secure Tag, however, is more expensive than the paper alternative. Da Silva estimates that once his company is producing Secure Tags in volume, it will be able to offer the devices to airlines or airport authorities for roughly 38 cents each, while paper RFID bag tags would cost around 15 cents apiece.

D&D Secure Tag claims its devices represent a possible new revenue stream for airlines that paper-based tags cannot offer. Da Silva says airlines could generate this revenue by increasing the security surcharge for each ticket. "The cost of the tag is less than a postage stamp, but the airlines could increase the security surcharge by, say, \$1," he says.

Because use of the Secure Tags would assure passengers their bags have not been tampered with or opened by anyone other than the TSA, he claims, they would willingly pay this surcharge.

The Secure Tag, says Da Silva, would also provide airlines with all the other benefits RFID bag tags can offer—namely, fewer lost or mishandled bags, which would translate into considerable operational savings and happier customers.

D&D Secure Tag has created prototypes of its device with UHF EPC Class 1 Gen 1 inlays from [Alien Technology](#). The two companies are currently looking for an airline with which to partner on a proof-of-concept field trial, though in this case, each Secure Tag device would contain an Alien EPC Class 1 Gen 2 inlay instead of the Gen 1 inlay now being used for the prototype.

Bob McKinley, vice president of transportation business development for Alien Technologies, says he has not seen any other RFID devices similar to the Secure Tag, and that Alien is working to organize various stakeholders that can provide RFID-based luggage tracking solutions. "We want to take advantage of partnerships with companies like Secure Tag that are developing smart solutions," he says.