

# Mitsui Completes Successful E-Seal Trial

When the shipping logistics provider field-tested an RFID container security system from Savi and E.J. Brooks, the equipment performed without a hitch.

By Claire Swedberg

Aug. 31, 2005—Shipping logistics provider [Mitsui & Co. USA](#) has completed an error-free field trial for an RFID container seal system that provides automatic container-intrusion detection, the company reports. Seals were provided by [E.J. Brooks](#), while [Savi Technology](#) manufactured the RFID tags and readers (interrogators) used in the trial. Mitsui determined that all 65 RFID security tags and seals worked effectively, without the false-positive reads that have plagued previous trials Mitsui and other companies have held using hardware from various manufacturers.

The field test involved 50 Savi ST-676 ISO Container Security Tags and 15 E.J. Brooks E-Seals, a lower-costing option. Both devices use active Savi 433.92 MHz RFID tags that comply with the ISO 18000-7 standard. Mitsui employees attached the tags to empty cargo containers at a consolidation point in Southern California, then trucked them to the Port of Los Angeles. From there, the containers were shipped by ocean vessel to the Port of Hong Kong, where they were unloaded and trucked to a deconsolidation endpoint to be physically and electronically unsealed. As part of the trial, six containers were deliberately breached at the final destination, and each of the ST-676 tags issued an alert that a door intrusion had occurred.

The ST-676, which attaches to a closed container door, consists of a battery-powered RFID tag, an antenna and a closed-door sensor that detects when the door is closed, or when light enters the container. The Savi system also includes temperature, shock and humidity sensors to measure the environmental conditions cargo is exposed to in transit. If a container is opened in any manner, the tag sends an alert that can be read by a handheld or fixed-position RFID interrogator. The signal then goes through the SaviNetwork—a computer network resulting from a joint venture between Savi and [Hutchison Port Holdings](#)—says Savi Technology Chief Operating Officer Lani Fritts.

E.J. Brooks' E-Seal consists of a metal locking bolt with a plastic case that holds the RFID tag linked to a sensor. The device sends an alert in the same manner as the ST-676 if the bolt itself is tampered with. This option, Fritts says, is more of a deterrent than a preventative mechanism since the locked bolt is clearly visible on the container door. While it can alert the SaviNetwork if someone cuts through the bolt, it cannot detect if the container is opened in any other way, such as by removing the door hinges or cutting a hole in another part of the container. The intention of the system is to thwart terrorists intending to break the bolt, explains E.J. Brooks Executive Vice President Scott Kirk.

Mitsui has been looking into technology that can provide automated security, according to Yoshibumi Kotsuka, director of logistics at Mitsui USA. "In the past, we have used earlier versions of this [Savi] product," Kotsuka says, for tracking the conditions of the container throughout a shipment. Because of impending new regulations from the [U.S. Department of Homeland Security](#), companies in the shipping industry are seeking technology that would automatically verify that a container was locked and remained locked throughout its transportation.

The system, Kirk says, “is born on the basis that it is widely expected that the Department of Homeland Security will issue [a] seal verification requirement.” That requirement will presumably mandate that a shipper verify the seals on its cargo containers have not been tampered with, signifying the container’s security has not been breached. Mandating seal verification, Kirk says, “will force the automation process,” since relying on manual checks of each container would slow the shipment process and cost the shipper more. The automation process will allow shippers and ports to verify that a seal has not been tampered with, but without employing personnel to check each seal manually.

The important point for this trial, Fritts says, is that all containers were transported without any false positive results, something that has been a problem in previous trials of RFID security tags and seals, including those from Savi and E.J Brooks. False positives occur when the device indicates the container has been tampered with, when, in fact, it has not. This often results from the heavy impact and rough handling containers receive during shipment. Kirk compares the ordeal experienced by the average container to “four car crashes a day.”

With the success of the trial, Kotsuka says, Mitsui will now evaluate the costs versus financial gains that would come from adopting the E-seal or Savi ST 676 security tag system throughout its commercial shipping enterprise. Either system could save Mitsui money by catching a security breach or discouraging security breaches, as well as by reducing the time the container would spend being inspected if security validation were required by the Department of Homeland Security or U.S. Customs. Validated Customs-Trade Partnership Against Terrorism (C-TPAT) shippers will be able to use a "green lane" to clear U.S. Customs without inspection in the near future, according to U.S. Customs and Border Protection Commissioner Robert Bonner. Mitsui currently has C-TPAT status and will be able to maintain that status for commercial shipments if it has an automated security system in place.

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