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## CUSTOMER CASE STUDY

# Hawaiian Legacy Hardwoods Cuts RFID Tagging Costs by 50 Percent

## Company Generates Tags 10 Times Faster than Before

### About Hawaiian Legacy Hardwoods

In Hawaii, over 90 percent of the native forests have been lost to development and agriculture. Founded in 2008, Hawaiian Legacy Hardwoods (HLH) has been implementing an aggressive program of replanting koa trees on hundreds of acres of land that was once a koa-dominated forest.

The company offers two unique programs:

- A Forest Investment program lets investors finance the planting of trees that will eventually be logged, providing a return on their investment.
- A Legacy Tree program enables donors to fund trees that will never be harvested that become part of a new, permanent Hawaiian forest. This can include individuals or corporate donors such as the Four Seasons Resort Hualālai, which is planting 500,000 legacy koa trees in conjunction with its 50<sup>th</sup> anniversary.

### Challenge

When donors and investors participate in the company's tree programs, they want to follow the progress of their trees and, at times, see them in person.

"Investors and those who have lost a relative and planted a memorial sometimes want to come out and visit trees. A single tree can be hard to get to," explained Jeff Dunster, CEO.

To facilitate this, the company envisioned tracking the exact location of every tree, and tying it back to a database with information about the donor/investor, when it was planted, maintenance and the tree's lineage. HLH could then more easily generate ownership certificates that included tree locations and serial numbers.

Typically, tree growers have used GPS-enabled corner pins on the edges of 100-tree blocks, which is far from a single-tree view. In an innovative move for the industry, HLH embarked on an ambitious project to tag each tree with radio frequency identification (RFID) technology.

However, HLH had to find a durable and efficient way to tag trees. Plastic tags printed with bar coded or human readable ID numbers would not likely survive the 25 years that a tree grows before being harvested. Moreover, with volume scaling quickly, the company had to move beyond its manual process of creating tags with label guns. It was time-consuming when the company made 40,000, and untenable as HLH expects to grow to an estimated 120,000 plantings per season.

### Solution

Looking for a more efficient and scalable tagging solution, HLH engaged partners SimplyRFID, an RFID solutions company, and Confidex, an RFID label supplier. Both recommended Zebra® printers as a dramatically faster way to generate labels.

### Customer

Hawaiian Legacy Hardwoods

### Industry

Forestry

### Challenge

HLH planned to implement RFID to allow the company, and its investors and donors, to track trees on an individual level.

### Zebra Solution

Zebra® R110Xi4™ printer/encoder

### Results

- HLH creates about 100 tags per minute, easily 10 times faster than before.
- The combination of faster printing and the Confidex Carrier labels drives down the cost of RFID tagging by approximately 50 percent.
- The new process ensures greater accuracy.



(Continued)



"We looked at a few different RFID printing options and, at the end of the day, everyone seemed to say that Zebra was the most durable," Dunster said.

The Zebra® R110Xi4™ RFID printer/encoder—optimized for high-volume operations—prints and encodes UHF RFID smart labels. By encoding RFID inlays that are spaced closer together (0.6"/16 mm), the R110Xi4 enables a lower cost per label, fewer media-roll changes and faster throughput than other printer/encoder manufacturers. That results in throughput of up to 100 tags per minute—considerably faster than the company's previous approach.

Additionally, the Zebra R110Xi4 has the flexibility to work with a broad range of media types. In this case, HLH uses Zebra printers with Confidex Carrier™ labels, making for a fast, durable combination that can handle growing volumes.



For each tree, HLH runs the Carrier labels through Zebra printers and affixes them on stakes. Each label has an RFID chip and a serial number that is linked with GPS coordinates in the database along with details about tree ownership, growth, maintenance, lumber-yield and pedigree. They then dip stakes in a plastic sealant that protects them from the elements.

As they plant each sapling, the 3-inch tag, encased in plastic, is inserted into the ground sticking up enough to be easily read from a distance of about 10 feet. To read tags—even with years of buildup of leaves and debris—the company uses the Convergence Systems CS101 handheld interrogator. From the CS101, data is transmitted wirelessly to the company's database.

## Results

In the current season, HLH will print 80,000 labels and targets 120,000 for next season. At that volume, the previous process for creating labels would have required substantially more manpower.

"We print about 100 tags per minute now, which is easily 10 times faster than before," said Darryl Fox, chief operating officer. "We spend a lot less time and manpower making RFID tags."

The combination of faster printing and the Confidex Carrier labels drives down the cost of RFID tagging by approximately 50 percent. Just as important, the new process ensures greater accuracy. Before, the many steps in the process introduced too many opportunities for error.

With its RFID solution, combined with GPS tracking, HLH next looks forward to enabling its donors/investors to pinpoint their trees on maps and via tools like Google Earth.

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