

Case Study: RFID Inventory Tracking

Using Motorola fixed and mobile RFID readers, BizSpeed helped Knox Nursery deliver a 12 month payback on work in process (WIP) and inventory management.

Knox Nursery is a wholesale nursery based in Winter Garden, FL. As a wholesale grower, Knox has approximately 8 acres of greenhouse space where seasonal variety plants are grown to order and shipped across the US. Half the plants are shipped via FedEx and half are shipped via truck.

Each order has to be tracked through the whole growing process – which is the nursery equivalent of a manufacturing process. Trays are planted via conveyor belts, where the process automatically runs a Print-and-Apply barcode to attach a serialized barcode and encoded RFID tag.



BizSpeed worked with Knox Nursery IT Staff to integrate RFID tracking into their existing manufacturing WIP and ERP software. The integration points included:

- RFID encoding station to encode and test barcode labels with RFID serial number. Includes a touchscreen PC with an optical scanner to activate the encoder. Upwards of 20,000 trays can be encoded each week.
- RFID scan to inventory – as trays roll into the greenhouse, the RFID reader confirms entry into production and updates the inventory tracking status.
- Mobile RFID scanner to take inventory of locations – this is done by location table (42 trays at a time) with wireless queries to the inventory system for updates.
- Mobile rework tracking with barcodes – when trays contain plugs (seeds) that need to be disposed or consolidated to a different tray for further growing, they rework and consolidated trays are scanned with a barcode and the inventory system is updated wirelessly. These are done via barcode due to the close proximity of RFID tags and the need to uniquely identify each tray.
- RFID shipping – two shipping portals were implemented. Each receives approximately 50% of the shipping traffic.
- RFID Rack Shipping – for large orders, trays are shipped in racks via truck. The shipping area has a group of portals, each with a touchscreen and alert light + alarm. The operator uses the touchscreen to select the order to ship. The screen(s) then show all products on the order and as the trays are moved through the portal, the ship count is decremented. If a tray is not supposed to be on that shipment, the alarm sounds so the shipper knows to stop and remove the tray. Once complete the shipper touches the screen and a shipping list is printed.
- RFID FedEx Shipping – for smaller orders, trays are shipped via FedEx. The operator uses a touchscreen to select the order and the box sizes. The touchscreen shows the items on the order and as the shipper moves the items on the conveyor past the reader, the order is updated. Once complete, the operator presses the 'box

filled' and the shipping system access fedex.com to generate the shipping label in real-time. A second label is printed with the package contents and both labels are attached to the box. Customers can receive the FedEx tracking numbers for tracking.

- RFID mobile inventory portal – trays move all through the greenhouse during their growing season. A mobile portal was implemented to allow scanning all trays that pass the portal and recording their table (inventory location) and serial number.
- RFID is a very good fit for the nursery industry. Barcodes allow scanning of individual trays, but in bulk it is too cumbersome and difficult because the barcodes get covered with water, dirt, leaves, etc. and each one must be cleaned to read it. RFID allows quick, accurate scanning without requiring direct line of site.

The project was started with a pilot and RFID site survey. These are critical to understand RFID's effectiveness in your environment. One example of the pilot's findings was that we could not read all tags once trays were put in a rack – we could only read approximately 85% due to the rack acting as a Faraday cage. This helped in the process design to scan trays before entering the rack.

Knox Nursery was able to achieve close to a one year payback. Knox and BizSpeed are marketing the RFID integration components and GrowersOwn (Knox's Nursery ERP system) to other growers.



800-852-3282

sales@posdata.com