Solutions

Issue 97

EMP TECHNICAL GROUP

RFID Tracking for Plants Outdoors Using ATV

Challenge: A customer needed to be able to track and take inventory for a very large square area of products, sometimes taking days to look for certain items with no real way to track said items or the location of them.

Solution: Outfitted a Burro AGV (Autonomous Guided Vehicle) with a Zebra FXR90 RFID Reader to navigate the outdoor property, capturing and pairing RFID tag scans with GPS data for precise location tracking. A 5G antenna was installed to ensure reliable communication between the RFID system and the cloud-based network.

Embedded RFID Product Tag

Story: A wholesale plant nursery managing inventory across a 200-acre site faced ongoing challenges using barcode technology for product tracking. To improve accuracy and efficiency, EMP engineers introduced an RFID-based solution integrated with an autonomous vehicle. After evaluating the property using mobile RFID demo equipment, EMP installed a Zebra FXR90 fixed reader—with GPS and cellular capabilities—onto a Burro autonomous robot. Existing barcode labels were replaced with custom RFID tags, allowing location-tagged reads as the vehicle moved through the site. To support data transfer, a 5G LAN antenna was added to maintain consistent connectivity between the reader and the nursery's cloud-based inventory system. This setup enables autonomous inventory collection and automatically generates a mapped layout of plant locations. The system reduces manual labor, increases visibility, and creates a more structured inventory process suited to the scale of the operation.

Zebra FXR90 RFID Reader

Old Standard Barcode Tag

**NEW* Embedded RFID Tag*