Airline Logistics & Distribution using RFID Technology

Demetra L Daniels
GM – Process & Technology Engineering
Delta operates:

20 Aircraft Types

A fleet of over 867 mainline aircraft and 350+ regional jets

At an average age of 15 years

Delta TechOps maintains a large breadth and depth of technical knowledge and know how in order to maintain industry leading operational performance
Delta Air Lines Logistics Network

Domestic Distribution & Logistics Locations

Global Distribution & Logistics Locations

36 Domestic and 28 International Line Operations
Phase 1 (1A) – Provide inventory accuracy at Line stations using RFID technology to track Inbound parts movements, parts on the shelf, Shelf Life, and misplaced inventory location finder.

Phase 2 (2A) - Provide inventory accuracy at Line Stations using RFID technology to track Outbound parts movements.

Phase 3 - Provide inventory accuracy at Warehouse using RFID technology to track Inbound parts movements, New part tagging.

**Goals of Logistics RFID**

- **Track Inbound & Outbound Inventory**
- **Significantly reduce labor required for physical inventory**
- **Access to accurate inventory each day**
- **Visibility of missing or incorrect shipments**

Ensures that parts required for maintenance are available for scheduled events.
### Logistics RFID Implementation

Corporate initiative to continue to leverage the use of RFID Technology

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>December 2013</td>
<td>RFID Proof of Concept (POC) on Wheels in ATL</td>
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<tr>
<td>April 2014</td>
<td>Successful RFID implementation allowing Logistics to track wheels at 24 x 7 stations using AeroTrack software by Aerospace Software Developments (ASD)</td>
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<tr>
<td>October 2015</td>
<td>Completed Release 1 - Tagging and Inventory Scanning for all assets in the Domestic 24 x 7 stations. Nearly 20,000 assets received RFID tags in two months. Store and Forward hand held GUI</td>
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<tr>
<td>May 2016</td>
<td>Implemented Release 2 - Outbound part tracking at 24 x 7 stations. Store and Forward hand held GUI</td>
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<tr>
<td>July 2016</td>
<td>RFID Proof of Concept for fixed scanner use for inbound and outbound parts in MIA for unmanned stations</td>
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<tr>
<td>September 2016</td>
<td>Stabilization effort - rollback to Modified Release 1 due to slow response time on Store and Forward hand held GUI</td>
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<tr>
<td>February 2017</td>
<td>Implemented Release 3 - Inbound parts tagging in the warehouse.</td>
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<tr>
<td>May 2017</td>
<td>RFID Proof of Concept for fixed scanner use for inbound and outbound parts in ATL for manned stations</td>
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<tr>
<td>June 2017</td>
<td>Implemented Release 1A - New Synchronous GUI for Tagging and Inventory Scanning for all inbound assets in the Domestic 24 x 7 stations.</td>
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<tr>
<td>October 2017</td>
<td>Implemented Release 2A - New Synchronous GUI for outbound part tracking for assets in the Domestic 24 x 7 stations.</td>
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Logistics RFID Process

Warehouse → Remove & Install → Line Logistics → Handheld device manager

Read Tagged Assets → Print Tag for Non-Tagged Assets

Middleware → Inventory Management System

Benefits:

Easily Locate Assets

Inventory Scans & Auditing
Key Benefits of RFID Implementation

- Successfully tracking wheel & brake movements to line stations
- Implemented RFID tracking of incoming and outgoing inventory at all 24X7 stations
- Realized Cost Savings on labor required to complete physical inventory
  - Depending on station size, reduction of 2-3 people for 2-3 days versus one person 2-3 hours
- Ability to update station inventory on a daily basis
- Exception reports provide visibility to missing or misplaced parts
- Improve operational performance with accurate parts availability for scheduled maintenance
- RFID used to locate misplaced inventory to support Flight Schedule operation
- RFID inputs used to update system of record; real time without human keyboard entry requirements
TechOps

- Warehouse Fixed Scanner Implementation
- Fixed Scanner Implementation at 24X7 Stations
- Track parts movements to/from repair shops within Engine Maintenance & Engine Test Cell
- Track parts movements within Engine Maintenance
- Track Engine completion status within Engine Test Cell
- Expansion of successful Airframe RFID of critical A/C items
- Hangar Tooling RFID
- Hangar Equipment RFID
- MRO & Safety RFID
Any Questions?