



Aviation RFID Overview

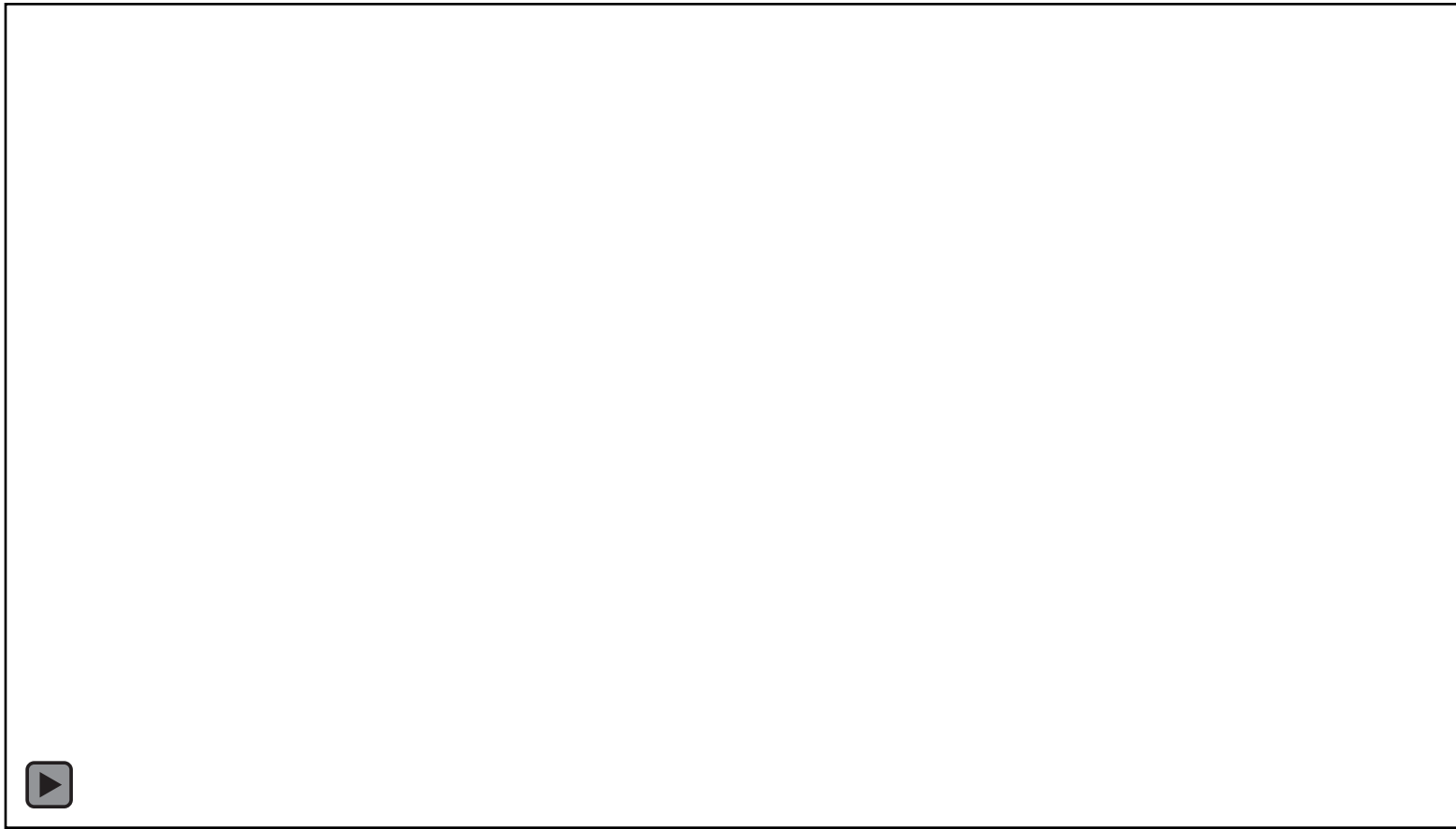
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ATA Spec2000 eBusiness
Montreal, Canada
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What's the End Game with Aviation RFID?

800x faster than manual process





Brief History of Aviation RFID

- 2002 – Boeing/FAA initial meeting on RFID
- 2003 – 2006 creating the ATARFID spec in Chapter 9
- 2005 – 2006 Boeing RFID sponsored symposiums
 - – 10 cities around world for airlines, MROs and OEMs
- 2006 - Boeing and Airbus commitment to RFID-tag 787 and A350s
- Boeing still expanding with other fleets; Airbus stopped
- 2009 – Chapter 9 RFID industry standard - 98% solid and complete
- Enhancements and minor changes since then by FAA, SAE, ATA



How is RFID Being Used - Airlines

- Delta, solved an O2 Gen problem on 757s with RFID
 - Within a month was solving O2 Gen issues on other fleets, then vests and other emergency equipment
- Now: all 10 fleets 100% tagged (1000 A/C), new A/C tagged before service
- Tags flying: 387,000, with new planes coming, will be 408,000
- OEM tagged: 211,000 vest, 2000 EEMKs, remainder legacy tagged
- 40 part types = 500 PNOs, 85,000 O2 Gens, 82,000 EEDs
- Cockpit placards, LOTO, KanBan bins, parking lot management, parts tracking
- Challenges: low OEM adoption of RFID and Spec2000 data
- Benefits: “it’s the way we’ve always done things”



How is RFID Being Used – Safran

Safran/Zodiac was the first OEM to tag components

- Currently:
 - 3 million vests tagged
 - 20,000 rafts tagged
 - 10,000 slides tagged
- Expanded vest/raft tagging from NJ, to vest factory, to Mexico
- First to adopt “ELP” – Embedded Life Part tracking
 - Able to read part, serial # and expiring date on subassemblies in slides/rafts
 - This allows airlines to track those parts without removing slide from aircraft
- Tracking all tools used to assemble slides/rafts to avoid errors



How is RFID Being Used – Airlines

- AeroMexico
 - All 164 A/C have tagged vests
 - Moving to expand to all other EE components
 - Benefits: a 4-hr vest check is now 15 minutes – a 16x improvement
 - Knowing exact expiration date allows for maximum service life
- American – tagging all vests and O2 Gens
- Emirates – checking all onboard EE items
- Lufthansa – checking all onboard EE items
- Republic – vests on all fleets tagged plus 9 other EE item types
 - Benefits: faster data collection, better accuracy. Tool tracking is next
- One software provider tracks 60+ different component types on 1M components on 5,000 aircraft / 365 days a year



How is RFID Being Used – Airlines

- United:
 - Phase 1 – all vests tagged on 1000 A/C – 100% complete
 - Phase 2 – EE tags on everything except O2 Gen – 90% complete
 - Phase 3 – Airbus cargo straps – 400+ A/C – 50% complete
 - Phase 4 – O2 Gens tagged – 400+ A/C – 50% complete
 - Phase 1 & 4 are biggest manhours savings
 - RFID ~~Aero~~Check data dashboard shows upcoming expirations
 - This has saved flight cancellations – issues caught before too late



Other Onboard Aircraft Usage

- On widebodies, Delta tags 62 different types of equipment
 - You don't have equipment that we haven't tagged!



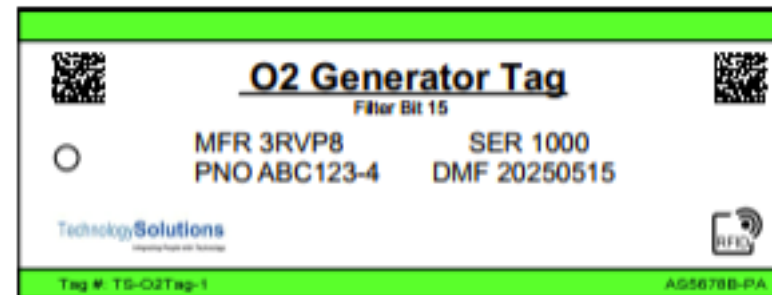


Boeing's RFID Efforts

- Boeing can send airlines all the RFID-tagged Serial #s via the ARL
- Expansion of RFID on A/C beyond the pressure vessel.
 - Spoilers, RAT, Flaps, Droops, Flaperon, Doors, Elevator, landing gear, Aileron, Bridge outboard gear, Trunnion drag brace, folding wing tips & more
- High Volume RFID deployment in developmental
- A/C environment – what are Airlines seeking, voice of customer – they are open!



Standard RFID Tags Available for All Equipment



Plus, custom tags are available 'off-the-shelf' for metal mount tags and special items



RFID Aircraft Security

- Airlines like British, KLM (and soon) Westjet, Air Canada use RFID TSA security solutions
- Locations where used:
 - Life vest boxes
 - Life vest pouches
 - Securing seat cushions to frames
 - Lav shrouds
 - Panels and hatches that should remain unopened
 - Examples:



New RFID tamper seal

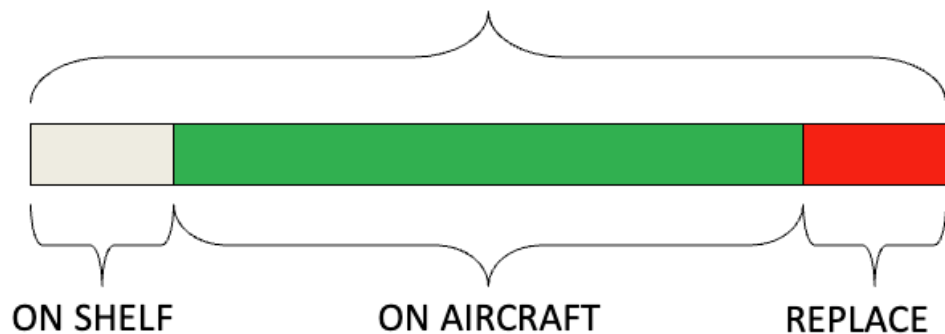




Benefits of Using RFID

- Data collection is 800x faster than manually
- Data is 100% accurate –no bad data in your systems!
- Avoids FAA/EASA fines
- Avoids overtime / excessive workload / cancelled flights
- Avoids wasted material costs
- Maximizes on-aircraft component time:

• 12 or 15 year O2 Generator Lifetime



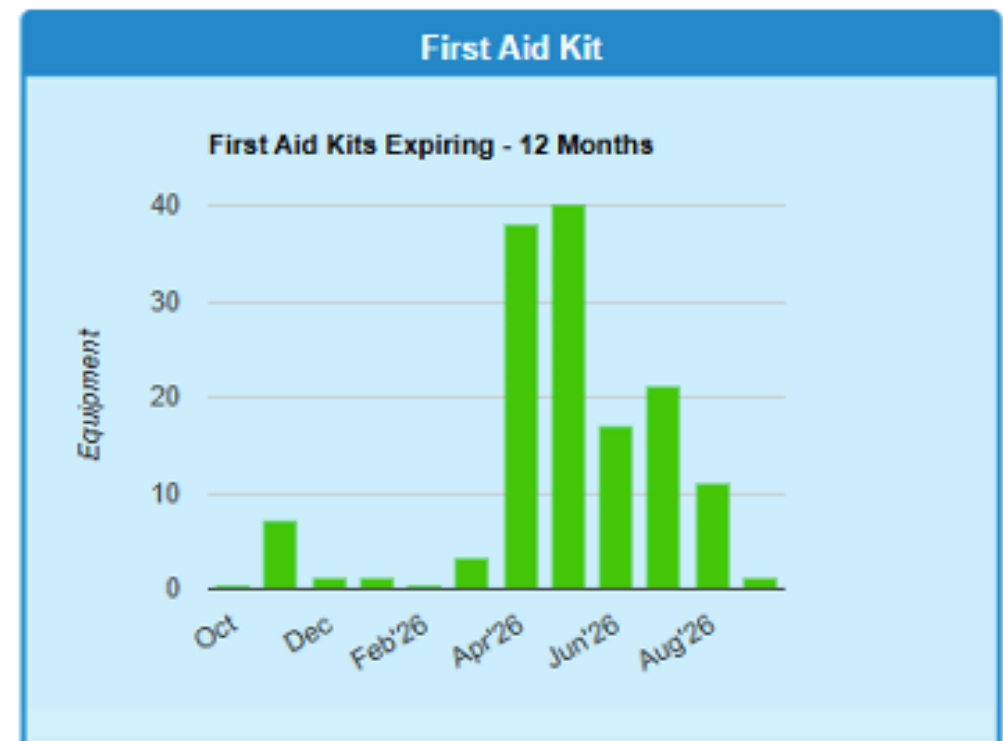
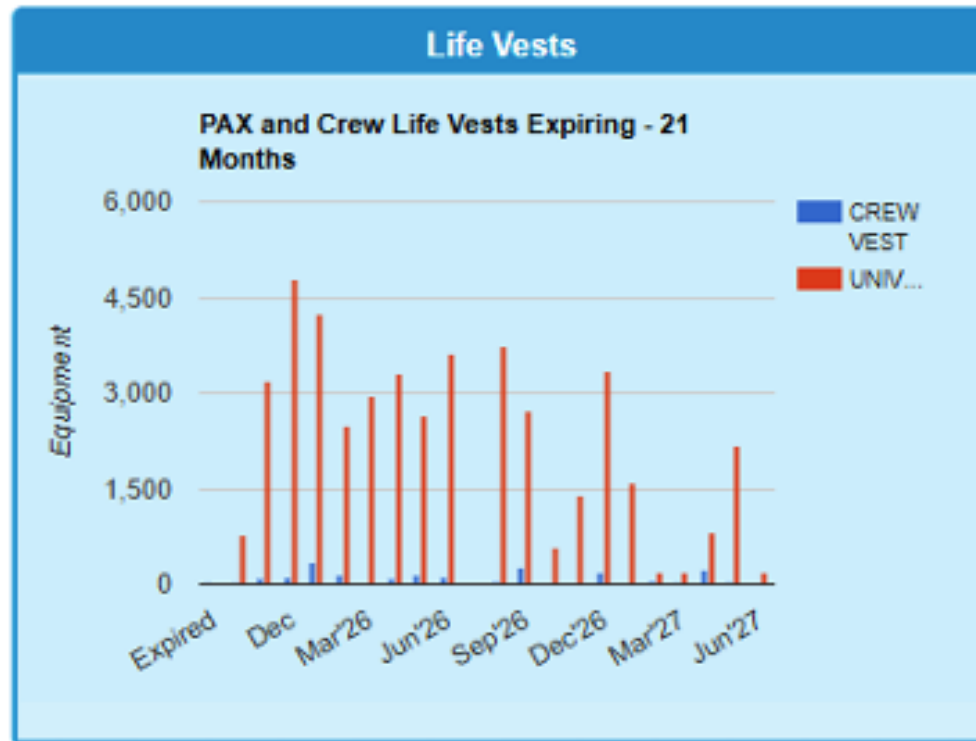
O2 Gen Lifetime with RFID





Management Data Chart Example

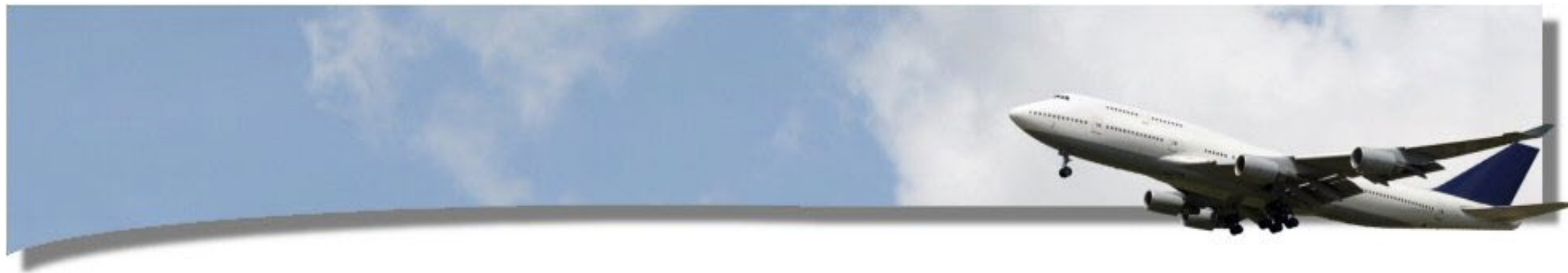
Any item that a) must be present, and b) not be expired, can be RFID tracked and reported. Here are two examples:





Many On-Ground Applications

- Tool Tracking, including calibration dates
- Parts Tracking in repair process
- Expense Bin / expendable replenishment (KanBan)
- Logistics movements
- GSE tracking
- LOTO circuit breaker to prevent the 64 deaths in 2024
- Parking lot management
- Seat Cover cleaning tracking
- Composite material time out of freezer
- Expired chemicals and adhesives



Reasons why are you not already doing this?

- TechOps likes to slow the airline down as much as possible
- a 7 month project ROI is not good enough for you
- AOGs are fun and exciting
- Allowing material to expire on the shelf makes your company more competitive
- Removing all components on A/C is easier than finding which one will expire

...Or...

- **YOU haven't brought this information back to management!**



Where to get Help

- OEMs: go to www.AviationRFID.org
- Airlines / MROs: visit www.TechSoln.com
 - Lots of information and resources for airlines, MROs and OEMs
- Anyone: my LinkedIn page for Posts, Videos:
 - <https://www.linkedin.com/in/jon-andresen-08730/>
- Join the industry-wide RFID Tag Team (contact me directly)
- Join the ATASpec2000 RFID Taskforce
- Schedule a **free**, 1-hour conference call with me - an engineer!

Contact Me





Questions ?

Thanks for your interest !

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Contact Me





More RFID videos and information

RFID for OEMs



RFID O2 Scanning



Tool Tracking Factors



RFID Voltage Check



RFID for Airlines



Wheel Tracking



Aircraft Tag Catalog



TechSoln Home



Contact Me



RFID Vest Scanning



Trolley Tracking

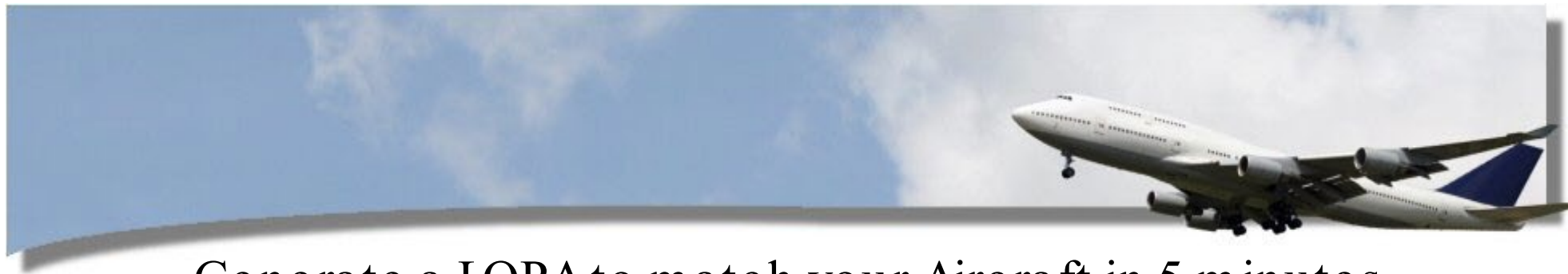


Security Tag Catalog

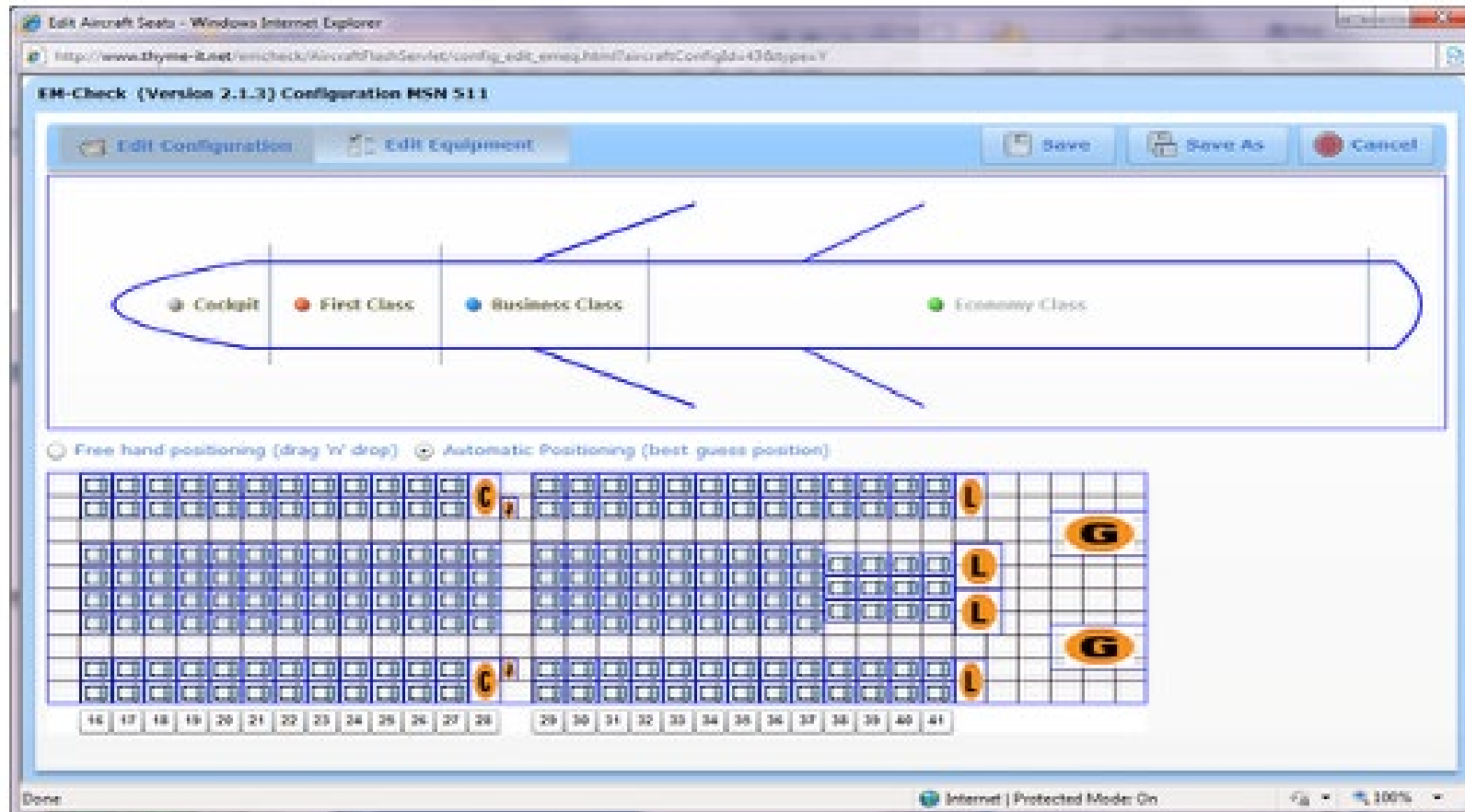


KanBan RFID





Generate a LOPA to match your Aircraft in 5 minutes
using RFID *Aero*Check

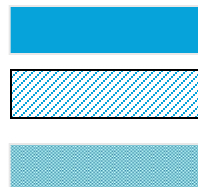


ATA Spec 2000

Functional and Data Architecture

Advanced Forecasting & Planning										Maintenance Cost Analysis					
Inventory Control										Cost-to-Repair	Reliability Data				
Delivery Configuration Data	Serial Number Tracking	Purchasing	Invoicing	eA/C Xfer Record	Suspected Unappvd Parts	e8130 Electronic Documentation	Warranty	Repair	Exchange Parts		Loan/Borrow	Shop Tear Down Report	Line Removal Data	Schedule Interruption Data	
	Traceability/Authentication of Parts										Pilot, Cabin, & Maint. Log	Flight Hours & Landings			
	Permanent Bar Code/RFID Identification of Parts														
Spec 2000 Common Data															

Legend:



Existing Standards

'In-Process' Standards

Future Standards