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Value Chain Visibility and Auto-ID
Flyable RFID project manager

Airbus Executive Overview

Value Chain Visibility & Auto-ID
MACRO CHALLENGES

• 18 design/manufacturing/assembly sites across the world

• Exchange rate pressures

• New aircraft programmes (A380, A400M, A350, A320 NEO)

• Production rate increases

• Power 8+ programme, EBIT pressures

• Clear focus on enterprise eco-efficiency

Constant pressure for continuous improvement and innovation
Why Increase Visibility? Why RFID?

RFID, Bar Codes etc.

- Visibility: Information about working, not working
- Measurability: Where is it working, not working?
- Business Process: Improve the way of working
- Business Savings: EBIT, Cash, Cost Avoidance

Quick wins through data automation
Long term wins through continuous improvement

Improving visibility is a pre-requisite to improve the “way of working” and deliver business savings
Visibility, Measurability and Savings
They are all connected

- All business savings come from improving a “way of working” i.e. process
- Level of visibility and measurability determines level of process improvement
- RFID can help improve level of visibility and measurability \(\rightarrow\) savings

The level of visibility and measurability determines the level of savings possible; RFID is an promising enabler to increase this level of savings
RFID + PROCESS MONITORING
Enables Process Improvement

RFID

Process Monitoring

Set Alert parameters for process steps

Monitor performance against targets

KPI trend and prediction

Automation

↑ Productivity

↑ Quality

↓ Cycle time

Real time reporting

↑ Process Optimisation

↓ Identify Variations

↓ Automated Alerts

RESULT = Leaner and more competitive business processes
The VCV Programme
The Business Radar Concept

Accurate + Streamlined = Efficient operations

Accurate + Streamlined = Efficient operations

RFID = Airbus Business Radar
CROSSROADS & DECISION TIME
The situation pre-corporate programme

- Collection of 15 independent projects
- Fragmented approach; multiple standards, solutions and vendor landscape
- Creation of multi-function Auto-ID Steering Committee
- Company strategy, consolidation and prioritisation of activities
- Agreement to develop a harmonised approach and solutions for deployment
- Analysis of benefits, pilot proof points, bottom up business cases, industrialisation
- Selection of standard solutions and services for Airbus/EADS

Clear pull from internal/external customers
ONE Airbus approach : it works!
Company approach to improve business processes through better visibility

- Scope is focused on big picture; Airbus value chain not functional silos
- RFID is seen as a key enabler to improve visibility & business processes

Airbus is taking an integrated and value chain approach for the potential application of Auto-ID across its business processes
The VCV Programme
Total Lifecycle Visibility

Value Chain Visibility and Auto-ID Programme

Non-Flyable

Release 1

Logistic

Supply Chain Tracking
(3PL Centre, Toulouse)

Inventory Management
(A380 FAL, Toulouse)

Distribution Tracking
(A380 FAL, Hamburg)

Manufacture

Global Transportation
(Beluga, Hamburg Station)

Work In Progress
(A380 Hamburg, St Nazaire, Broughton)

Tooling Management
(A400M, Filton + SA Flowline, Broughton)

Assembly

Inservice lifecycle

Flyable

Release 2

Distribution

Warehouse Logistics
(3PL Centre, Toulouse)

Inventory Management
(A380 FAL, Toulouse)

Distribution Tracking
(A380 FAL, Hamburg)

Assembly

Cargo

Release 3

Inservice lifecycle

The portfolio of RFID process “lighthouses” already deployed in multiple business areas can benefit all industry sectors
DIFFERENT TYPES OF RFID
Total Lifecycle Traceability

Value Chain Visibility and Auto-ID Programme

Non-Flyable

Flyable

Release 1

Release 2

Release 3

Logistic

Distribution

Manufacture

Assembly

Lifecycle of parts

Cargo

RFID shipping labels

RFID Containers

RFID on jigs

RFID on tools

RFID on parts

RFID on assets

There is no one size fits all solution
Different RFID enablers are used for different processes
DIFFERENT TYPES OF RFID
Integrated into a standard corporate s/w platform

Value Chain Visibility and Auto-ID Programme

Non-Flyable

Flyable

Release 1

Release 2

Release 3

Logistic

Distribution

Manufacture

Assembly

Lifecycle of parts

Cargo

Business & Infrastructure Monitoring and Reporting

Business Process Mapping & Legacy System Integration

Device Interfacing & Data Event Processing

RFID shipping labels

RFID Containers

RFID on jigs

RFID on tools

RFID on parts

RFID on assets
Each Dock has 11 Read Points (5 on the Left, Right and 1 centre). There are 6 docks in total on the A380 Final Assembly Line
Scope

750 Material Delivery Units (MDUs) containers per A380
Automated life cycle tracking of MDUs from 3PL to FAL

BENEFITS and STATUS TODAY

Streamline processes; right place, right time, first time
Reduce containers by 8% compared to manual process
Pilot Phase Over – Now in Production, 4500 containers
100+ RFID Reader Installations

EXPANSION : A320 Final Assembly Line
RELEASE 2 (NON FLYABLE)
Tooling Management

BENEFITS
Automated tools booking in/out and workers association
Optimised maintenance and calibration cycles
No tools search time, less work stoppage

STATUS
Pilots – Completed
Industrialisation – Completed

EXPANSION: 65,000 Tools UK and Germany
RELEASE 2 (NON FLYABLE)
Tooling Management

BENEFITS

Automated tools booking in/out
No tools search time, less work stoppage
Automated logistics tracking

STATUS

Pilots – Completed
Industrialisation – EIS April 2012 (175+ sensors)
BENEFITS
Automated and Digital Attestation Process
Faster Cycle Time and Reduced Paperwork
Improved Configuration Management

STATUS
Pilot - Completed
Industrialisation – Completed

EXPANSION : A320 and A380 Final Assembly Lines
BENEFITS
Automatic and real-time visibility of industrial processes
Automatic monitoring of processes and variations
Key enabler for Lean Improvements

STATUS
Pilot - Completed
Project - Completed

EXPANSION : All A380 Assembly Sites
**RELEASE 2 (NON FLYABLE)**

Visibility of Industrial Processes (VIP)

**EXPANSION**: All A380 Assembly Sites

VIP Wave 1 Project Scope

- Broughten – 1 building
- Hamburg – 1 building
- St. Nazaire – 3 buildings

RTLs will be deployed in A380 hangars across 6 plants to enable the tracking of 10 MCA types.

- St. Eloi – 3 buildings
- Stade – 3 buildings
- Gelse – 2 buildings
- Puerto Real – 1 building
- Nantes – 3 buildings
- Hamburg – 1 building

VIP Wave 2 Project Scope

- APC Planning - Integration
- APC JAGUAR
Use Case Studies
- 4 opportunity studies completed with airline customers and MRO partners
- All payback within 12 months, strong savings (up to multi-million €/year)

A350 XWB RFID Part Marking Specifications
- Distributed to Airbus suppliers in 2008, based on approved standards
- Suppliers deploying RFID solutions for part marking

Aerospace RFID Standards Finalised
- ATA Spec 2000 for data structure and high memory management
- SAE AS5678 for performance minima, test conditions and robustness

The introduction of RFID part marking on A350 XWB will help enable customers reduce their maintenance costs
Primary target is the parts answering all the following criteria:

- Serialized parts
- Line replaceable parts
- Repairable or with a life limit
- Mean Time Between Unscheduled Removal below 60,000 flight hours

A350 XWB – Suppliers

- Suppliers on board RFID project
- RFID tags specifications in suppliers contract

More than 3000 parts targeted (~600 Part Numbers)
A350 XWB – RFID technology

Technology chosen:
- Ultra High Frequency (UHF) RFID tag
- Passive tags (no power supply)
- Low and high memory tags
- Special packaging for aircraft environment:
  - Temperature, pressure, vibration, shock, humidity, flammability,...

Airbus selected supplier for high memory tags

Technology adapted to aircraft needs & constraints
A350 XWB – RFID technology

High-memory tags for repairable equipments:
- At least 12 years of maintenance records
- Reading range: 0.5 to 1m

Low-memory tags for non-repairable parts with a limit of validity:
- No part history (expiration date)
- Reading range: 5 to 10 m

The right technology for the right part
NEXT STEPS
EADS and Beyond…

EADS Parent Group
- Expansion across multiple business units within EADS Group
- Projects re-using Airbus processes, solutions, contracts and vendors
- Re-use of standards: Faster, cheaper and better

Airlines, MROs and External Organisations
- Airbus: catalogue of benchmark RFID processes across aircraft lifecycle
- Not limited to Airbus; generic and applicable to all players in the industry
- Approached by number of companies to develop and deploy projects
- Two projects already completed, three more in progress

Airbus catalogue of standard processes and solutions is providing value to multiple actors across the value chain
VCV foundation for services to airlines

Airbus maintenance operations with RFID for A350 (e.g. FHS-TSP)

A350 solutions & services (e.g. configuration tracking)

Consulting services
Specific airlines process solutions pre-A350 (e.g. repair cycle tracking)

Tooling
Loose equipment (e.g. life-vest)

General logistics (e.g. in/out or internal)
Transportation (e.g. Container tracking)

Non-Flyable projects

Airbus to leverage experience and volume (non-flyable) to propose packaged & scalable solutions & services to Airlines and MROs
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Is this view shared by the group? What is the priority?
Summary

- Airbus recognises RFID as a key enabler for improving processes
- Airbus is taking an integrated & end to end approach to the use of RFID across all business processes through a single corporate programme
- Airbus is actively working with airline, supply chain and industrial partners to develop an approach that maximises benefits to all actors
- Airbus is working with major industry players, standards bodies and authorities to ensure inter-operable RFID solutions

Airbus is using RFID as a **BUSINESS RADAR** to help build a **DIGITAL** and **FLY BY WIRE** view of the supply chain and its business operations