Evolution of RFID in Manufacturing

RAIN Alliance Members Meeting – Feb 5, 2020

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MARKET PRESSURES FOR MANUFACTURERS

- Individually Configured Products
- Faster Time to Market
- Improve Traceability
- Improve Safety
- Reduce Costs
- JIT / JIS
- SAFETY FIRST
- RECALL
SMART DEVICES ARE MAINSTREAM

2020 U.S. Consumer Electronics
Source: CTA
TECHNOLOGY EXPECTATIONS ARE CHANGING

Fixed

Mobile

Ubiquitous
BEYOND IOT – INTERNET OF EVERYTHING
RAIN IN MANUFACTURING

Aviation

Electronics

Raw Materials

Automotive
AUTOMOTIVE

Full Chain with RAIN

Smart Manufacturing and Logistics for automotive industry

- Product authentication
- Container Tracking
- Machine MRO
- Component tracking
- Tool Tracking
- KANBAN
- Just-in-time & Just-in-sequence
- RTLS / Monitoring
- Automated logistics, Shipping verification
- Truck & Train identification
- Quality control
- Lean manufacturing
- Warranty Data
- Spare parts authentication
ELECTRONICS

Full Chain with RAIN

Smart Manufacturing and Logistics for Electronics OEMs:
- WIP monitoring
- Component tracking
- Product authentication
- Lean manufacturing
- Critical tool identification

Smart Manufacturing and Logistics for IT industry SUPPLIERS:
- Automated logistics, Shipping verification
- Quality control
- Audit Compliance
- MRO

COMPONENTS  BLADES  CHASSIS  FINISHED PRODUCT AUTHENTICATION
AVIATION

Full Chain with RAIN

COMPONENTS

ASSEMBLIES

SERVICE

FINISHED PRODUCT AUTHENTICATION

Smart Manufacturing and Logistics for Aviation OEMs:

Lean manufacturing

Critical tool identification

Automated logistics, Shipping verification

WIP monitoring

Quality control

MRO

Smart Manufacturing and Logistics for Aviation industry SUPPLIERS:

Component tracking

Product authentication

Just-in-time & Just-in-sequence

Audit Compliance

Kit Verification
GROWTH OF RAIN WITHIN MANUFACTURING

Tooling

W.I.P.

Racks & Containers

Bins & Boxes

Individual Parts
Challenge
• Control complex product mix
• Manage customized cars through full assembly
• Improve reliability

Benefits
• Real-time production monitoring
• All car body related data available
• Process yields > 99.96%

Robust passive UHF RFID tag capable of withstanding the harsh conditions of car manufacturing.

Now Volvo Cars is able to track the car bodies all the way from the welding and paint shop to the point of final assembly.
ULTRA-RUGGED RAIN RFID ENCAPSULATED TAG FOR IDENTIFYING AGVS.

AGVS ARE ASSOCIATED WITH VEHICLE FRAMES AND WORKERS ARE NOTIFIED AT THE END OF THE ASSEMBLY LINE IF A PRODUCTION STEP WAS MISSED.
ENGINE MANUFACTURING
WIP MONITORING

Challenge
• Lack of visibility into part-to-pallet association and floor location
• 500+ hours of wasted labor spent annually inspecting pallets for potential quality issues.
• Costly recalls due to pallets being shipped with parts that did not meet quality standards.

Benefits
• Eliminated the need for a forklift driver to manually inspect each pallet.
• Visibility to which pallets contain specific parts so pallets can be located as needed.

Rugged RAIN RFID encapsulated tag for tracking metal pallets which hold engines during the manufacturing process.
HONDA ENGINE LOGISTICS
SHIPMENT ACCURACY

Challenge
• Errors in shipping products to the wrong location by loading onto the incorrect truck.
• Manual reading or barcode scanning required operators to dismount the forklift.

Benefits
• Immediate feedback to forklift operators that the engines are loaded onto the correct trucks.
• Higher safety with operators remaining on forklifts.
• Reduced labor costs.

Industrial grade, durable RAIN RFID tag for metal racks which transport Honda Engines.
Enables tracking of outgoing engine shipments to ensure outbound products are loaded onto the correct trucks.
METAL PRODUCT LOGISTICS
STEEL COIL INVENTORY MANAGEMENT

Challenge
- Tracking and managing millions of steel coils and bars coming from multiple suppliers. Manual or barcode based tracking resulted errors, high resource consumption, and risk of injury.

Benefits
- Automatic tracking reduces errors and brings accurate data of the assets.
- Positively identify assets from the safety of the fork truck.
- Increase of warehouse management efficiency, time and resources saving.
- Automated feedback when loading onto vehicles for distribution.

RAIN RFID tag for identifying metal materials. Identification can be safely achieved without dismounting vehicles.

Manufacturer relies on the RAIN Tag to be able to identify their products quickly and efficiently.
SMART KANBAN
INTELLIGENT PARTS REPLINISHMENT

Challenge
• Production delays due to inefficient KANBAN
• Manual ordering of replenishment parts
• Large inventory
• Challenge with RFID on ESD KANBAN bins

Benefits
• Reduce inventory
• Efficiently deliver smaller batches
• Automate replenishment orders

RAIN RFID KANBAN cards for use with intelligent KANBAN systems.
Intelligent KANBAN fulfillment for a wide variety of vehicle components.
DANA LEAN OPERATIONS
WIP MONITORING

Custom-built RAIN RFID tag capable of withstanding the harsh washing, painting, and manufacturing process.

Ability to track the parts through production with 100% traceability at each workstation.

Challenge
- Operator handling of parts
- Parts are shipped off-site to 3rd party
- Washing and painting process

Benefits
- 100% traceability through production (including off-site painting)
- MES integration for real-time updates
- Reduced labor costs
MATERIALS TRACKING
RTLS OF RAW MATERIALS

Challenge
• Tracking raw materials to bin level
• Large facilities (1M+ sq ft)
• Gantry cranes limit low ceiling mount

Benefits
• X,Y, Z axis accuracy for 3D positioning
• Integration to PLC systems for automated events based on items location
• Eliminates “searching” for materials

3D RAIN label capable of accurate reads in any orientation.
Ability to track the materials down to bin level location in large manufacturing facility.
DANA LEAN OPERATIONS

WIP MONITORING

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Thank you!