RFID COMMUNITY CONNECT

May 19 - 20

RFID on Metal in a Machine Shop Environment

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Purpose of the Presentation

- Why use RFID
- Why machine shops are adopting RFID
- Benefits over barcodes and manual tracking
- Real world case studies

Why RFID in Manufacturing?

- **Brief overview of industrial tracking challenges**
  - Metal environments interfere with traditional RFID
  - Barcodes require line-of-sight and manual labor
- **Common pain points:**
  - Lost or misplaced assets
  - Manual scanning errors
  - Lack of real-time visibility

On-metal RFID tags = durable, automated, no line-of-sight tracking

Why On-Metal RFID Tags?

- **Key advantages:**
  - Works directly on metal surfaces
  - Long read ranges (up to ~50 ft)
  - No line-of-sight required
  - Bulk/automated reading
- **Designed for harsh environments:**
  - Heat, paint, wash cycles
  - Industrial wear and tear
- **Enables:**
  - Real-time data capture
  - Process automation
  - Lifecycle tracking

Case Study #1 – Steel Door Manufacturer (WIP Tracking)

- **Challenge:**
  - Steel doors were being misplaced or shipped to the wrong customer location
  - Barcode-based tracking relied heavily on employees manually scanning every door
  - Missed barcode scans created gaps in production visibility
  - Lost doors resulted in costly rework, replacement orders, and rush shipments
  - Manufacturing environment included heat, paint processes, and heavy metal surfaces that created durability challenges for standard tracking methods

Case Study #1 – Steel Door Manufacturer (WIP Tracking)

- **Solution:**
  - Replaced barcode labels with durable on-metal RFID tags (OSP Universal Mini)
  - Added specialized paint mask protection to allow tags to survive painting and production processes
  - Implemented automated RFID tracking throughout manufacturing and shipping operations
  - Enabled hands-free identification without requiring employees to scan every item manually

Case Study #1 – Steel Door Manufacturer (WIP Tracking)

- **Results:**
  - Eliminated lost and misplaced doors in production
  - Improved shipping and order accuracy
  - Reduced labor spent searching for missing inventory and work-in-process items
  - Minimized costly rework and emergency replacement orders
  - Increased visibility throughout the production workflow
  - Achieved long-term operational success, with the RFID system remaining in use for nearly a decade

Key takeaway:

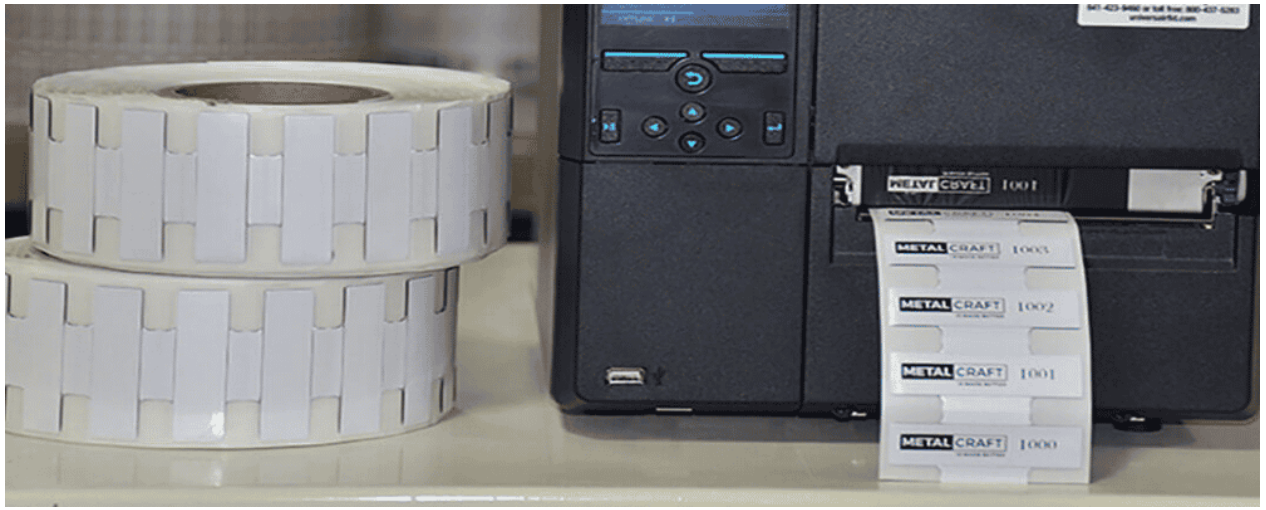
➡️ RFID replaces manual barcode tracking with reliable automation, improving visibility, reducing shipping errors, and stabilizing WIP processes in metal manufacturing environments.

Case Study #2 – High Volume Metal Components (Automation + Data)

- **Challenge:**
  - Manufacturer needed to track metal components from raw material through final installation
  - Wanted automated real-time production data collection
  - Needed more secure warranty validation in the field
  - RFID tags had to survive wash processes, paint processes, oven curing, and harsh field conditions
  - Standard RFID tags failed durability testing

Case Study #2 – High Volume Metal Components (Automation + Data)

- **Solution:**
  - Used RFID to automate work-in-process tracking and data collection
  - Implemented customized on-metal RFID tags from Metalcraft (OSP Universal Mini)
  - Developed a specialized two-ply paint mask to survive paint and oven curing processes
  - Integrated RFID printing and applicator automation into production



Case Study #2 – High Volume Metal Components (Automation + Data)

- **Results:**
  - Successfully automated production tracking processes
  - Reduced manual calibration time from 5 minutes to 5 seconds per part
  - Improved visibility into quality and assembly data
  - System scaled for projected production of 360,000 units annually
  - All tags and automation systems performed successfully in production

Key takeaway:

➡️ Rugged on-metal RFID tags enable reliable automation in harsh manufacturing environments where standard tags fail.

Case Study #3 – Valley Chrome Plating (Production Floor Efficiency)

- **Challenge:**
  - Producing 300+ chrome-plated truck parts per day
  - Handheld barcode scanning was unreliable
  - Employees frequently forgot to scan parts
  - Significant labor spent locating missing WIP parts
  - Needed a tracking solution that could perform reliably in a metal manufacturing environment

Case Study #3 – Valley Chrome Plating (Production Floor Efficiency)

- **Solution:**
  - Implemented Universal Micro on-metal RFID tags
  - Added fixed RFID readers throughout the production process
  - Automated tracking of work-in-process parts
  - Eliminated dependence on handheld barcode scanning

Case Study #3 – Valley Chrome Plating (Production Floor Efficiency)

- **Results:**
  - Reduced wasted labor time searching for parts
  - Improved production efficiency and workflow consistency
  - Increased visibility into manufacturing processes
  - Reduced human error and redundant tasks
  - Allowed employees to focus on higher-value work

Key takeaway:

➡️ Fixed RFID systems remove human dependency, improve WIP visibility, and stabilize manufacturing workflows in metal-intensive environments.

Case Study #4 – Derksen Portable Buildings (Inventory Tracking & NFC Automation)

- **Challenge:**
  - Manual serial number entry increased risk of transposed numbers
  - QR codes improved accuracy but still required scanning interaction
  - Needed a durable RFID solution for both wood and metal buildings exposed to outdoor conditions
  - Wanted to combine branding and serialized inventory tracking into one tag

Case Study #4 – Derksen Portable Buildings (Inventory Tracking & NFC Automation)

- **Solution:**
  - Custom NFC/RFID metal-mount tag
  - Designed to work on both metal and wood structures
  - Weather-resistant construction for long-term outdoor durability
  - Combined branding tag and serialized inventory tag into one solution
  - NFC tags programmed with serial numbers linked to unique URLs

Case Study #4 – Derksen Portable Buildings (Inventory Tracking & NFC Automation)

- **Results:**
  - Faster inventory tracking and reconciliation
  - Improved inventory accuracy and building visibility
  - Reduced risk of shipping the wrong building
  - Streamlined delivery and inventory processes
  - Opened future opportunities for customer interaction, product information, and ecommerce integration

Key takeaway:

➡️ Custom RFID/NFC solutions improve inventory accuracy, reduce manual errors, and create opportunities for future digital engagement.

Contact Us

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