

The Ultimate Industrial RFID Application Guide

Best Practices And More For Industrial RFID Tracking System
For Readers, Software, Tags, Labels, Inlays, and Sensors.



XERAFY

Create the right RFID tracking system for your applications: We share the application expertise developed over the years working with industry leaders to implement their solutions.

Tool Tracking



[Xerafy RFID for Tool Tracking](#)
[Aviation Tool Control](#)
[Smaller Tools](#)
[Rail](#)
[Construction](#)

Manufacturing



[Xerafy RFID for Paint Shop](#)
[Hi-Temp Processes](#)
[Injection Molding](#)
[Industrial Molds and Dies](#)
[Tooling Machinery](#)

Intralogistics



[Xerafy RFID for Warehouse Automation](#)
[Returnable Transport Items](#)
[Production Logistics](#)
[Work-In-Process Inventory](#)
[Order Fulfillment](#)

Oil and Gas



[Xerafy RFID for Drill Pipe Inspections](#)
[Drill Bits Downhole Tools](#)
[Offshore and Deepwater](#)
[Iron Fleet Maintenance](#)
[Rigging and Lifting](#)
[Mining Sites](#)

Data Centers IT Assets



[Xerafy RFID for Data Center Automation](#)
[IT Asset Inventory](#)
[IT Vendors](#)

Utilities



[Xerafy RFID for Waste Management](#)
[Weapon Tracking](#)
[Telco Towers](#)
[Smart Grid](#)

Healthcare



[Xerafy RFID for Loaner Tracking](#)
[Consignment Inventory](#)
[Sterile Processing](#)
[Medical Supply Chain](#)

RFID tool tracking systems automate tool management procedures with wireless tags, smart tool storage, and customized software used to identify, track and control tools in real-time throughout their workflows and lifecycles, and actively prevent FODs.



Where to begin an RFID tool tracking system project?

- **ROI** - Specify particular enterprise and/or departmental problems to be addressed, as well as the business rationale.
- **Procedures** - Review your tool management: manually with tool foam organizers, with sign-in/sign-out procedures, with visual IDs, or with barcodes.
- **Inventory** - Know your legacy inventory of hand tools, smaller tools, power tools, and equipment to track.
- **Deployment** - Consider strategic stages. Include redundancy and quality during proof of concept.
- **Connected Tools** - Industrial tools with native RFID features are available from leading OEMs.

Which RFID components are the best to use?

- **Agile Readers** - Fixed readers in both fixed and mobile tool storage units. Handheld readers enable mobile inspections and tool search functions.
- **Accuracy** - Optimize the system for reliability at long and short ranges.
- **Customized Software** - Adapt to your workflows to minimize change management.
- **RFID Tags** - Options for mounting on or embedding in, in a variety of sizes, available for optimized performance on metal, plastic, and wood surfaces.
- **Scalable Tagging** - Methods for retrofitting at point-of-use. Epoxy and heat-shrink tubing are ideal starting points, and a protective carrier can be added.

Explore Use Cases

- [Tool Tracking](#)
- [Tool Control in Aviation](#)
- [Smaller Tools](#)
- [Rail](#)
- [Construction](#)

Ask Our Engineers



[More Case Studies](#)

Tracking hand tools?

Start with smaller on-metal tags



[XS Dash](#)



[Pico On](#)

Power tools and mobile equipment?

Larger on-metal tags with rugged case and attachment



[Pico Plus](#)



[Nano Plus](#)



[MICRO Power](#)

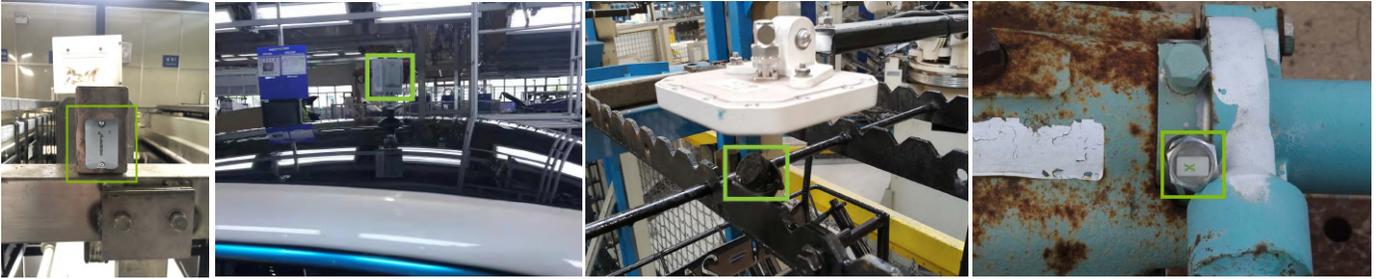
Plastic or wood surfaces?

Slimmest hard tag with multi-surface performance



[Slim Trak](#)

RFID technology is now being used beyond the supply chain to help manufacturing operations identify, locate, secure, and monitor the critical assets and processes they rely on, using industrial-grade RFID readers, tags, and sensors intended to gather the data required by production systems.



Paperwork, spreadsheets, and barcodes are holding back production systems when it comes to automation, scalability, and durability.

What to check for when selecting industry-grade system components for Industrial Processes?

- **Hi-Temp** - Survivability in extreme temperatures is critical. Rugged RFID tags surviving up to 250C are readily available. Above that level, the smart option is using tags that are easy to remove or replace.
- **Complexity** - Industrial processes come with complex parameters: Paint shops for instance involve a varying mix of temperatures, immersions, jets, chemicals, pressure, shocks, and vibrations.
- **Disposable** - Find the perfect balance between durable and disposable, e.g.: High-spec reusable tags on Paint Shop skids and conveyors, or disposable labels staying with each component throughout its manufacturing workflow.
- **Qualification** - Qualifying new systems for industrial processes takes time. Using pre-qualified components and involving experienced partners will accelerate the testing phase.
- **Customization** - Manufacturing relies on proprietary methods and equipment, making customization capabilities a requirement: Software, readers, tags form factors, mounting options, and materials.
- **Interoperable** - RFID tracking systems are designed to give real-time data with the accuracy and dependability required for automation, just-in-time, and custom manufacturing.

Explore Use Cases

- [Paint Shop](#)
- [Hi-Temp Processes](#)
- [Injection Molding](#)
- [Industrial Molds and Dies](#)
- [Tooling Machinery](#)

Ask Our Engineers



[More Case Studies](#)

Tracking in the Paint Shop?

Designed for dip tanks, cathaphoresis, hi-temp drying



[MICRO Paint Shop](#)

Tracking for Industrial Processes?

Rugged for hi-temp, fluids, acids, alkalins, shocks, vibrations



[MICRO Industrial](#)



[MICRO Heat](#)



[Autoclavable Roswell](#)

RFID for Injection Molding?

Embed in ABS, PE, PC...



[Pico In](#)



[XSKIN Theta](#)

Intralogistics Inventory

Intralogistics RFID systems improve inventory accuracy and order processing speed, from yard management automation to shipping and transportation. They are used to automate workflows, procedures, and data collection, assisting in the identification of bottlenecks, adjusting schedules, and improving supply chain visibility.



RFID systems deployed to track Intralogistics inventories are all about automating data capture in order to reduce workload and increase accuracy for information the whole organization depends on.

Where do you strategically place RFID readers in the warehouse, production facility, distribution center?

- **Dock doors, gates, portals, and overhead** - Provide coverage without interfering with workflows.
- **Forklifts, vehicles, and mobile readers** - For flexible on-the-spot checks.
- **Acceptance, dispatch, check-in-check-out** - Turn-key solutions available for specialized processes.
- **Data accuracy** - Read zones, positioning and calibration to enable high-speed data capture over long and/or short distances while preventing stray reads.
- **Interoperability** with WMS and ERP systems.

How to select an RFID tagging solution for Inventory tracking?

- **Durability, sizes, and read ranges** - Cost-effective inventory tracking.
- **Surfaces** - Performance optimized for metal, plastic, and wood.
- **Attachment** - Adhesives, hang ties, zip ties, magnets, and screws for flexible and durable mounting.
- **Serialization** - Encoded by the manufacturer or on-site.
- **Custom printed** - With text and/or barcode to make deployment easier.

Durable but cost-effective and durable tagging?

Start with a universal hard tag



Versa Trak



RTI Outdoor

Large inventory?

On-metal labels that can be printed and encoded on site



Mercury Metal Skin



Platinum Metal Skin

Small or curved surfaces?

Check out our tiniest flexible label and slimmest hard tag



Titanium Metal Skin



Slim Trak

Explore Use Cases

- Warehouse Automation
- Returnable Transport Items (RTIs)
- Production Logistics
- Work-In-Process Inventory
- Order Fulfillment

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More Case Studies

The Oil and Gas industry has successfully integrated RFID technology into drilling, completion, and production applications, to drive safety, reduce non-productive downtime, enhance operational efficiencies, and extend asset lifecycles.



Xerafy has developed RFID tracking and identification technology with the energy industry, bringing credibility to RFID for applications beyond supply chain management.

RFID tags: Prioritize embedded tags that are already qualified by the industry.

- **Global Standards** - Passive UHF RAIN RFID provides ATEX-certified on-metal tagging solutions at a cheaper implementation cost.
- **Qualified** - Designed and tested to meet real-world requirements in exploration, development, and completion.
- **Embedded** - Use welding, rivets, screws, or embed in the metal of a drill string, oilfield tool, lifting equipment to make it especially rugged.
- **Customized** - Encode unique serial numbers for item-level tracking, laser etch on the tag for information redundancy.

RFID Readers: Agile, in strategic locations, and without hindering workflows.

- **Read distance** - Long-range, hard-to-reach, bulk identification.
- **Accuracy** - Focus ranges to prevent stray reads when tripping pipes or identifying adjacent pipes on the same rack.
- **Placement** - Readers have a variety of shapes and sizes, can be placed strategically with data capture automation and coverage in mind.

Software: Automated tracking and interoperability for all.

- **Integrate** - Operate with existing systems, for full information access.
- **Operational Visibility** - suitable interfaces show Information needed.
- **Data** - Informed decisions on process efficiency and risk reduction can be made through insights and increased awareness.

Drill pipes and downhole tools?

Embeddable RFID tags



Xplorer Downhole



XS Wedge

Rigging, lifting, valves, pumps?

Extra-rugged tags for equipment tracking



Xplorer Surface



Roswell Autoclavable

Tracking tools and equipment?

On-metal rugged tags



Nano Plus



Roswell



Container Outdoor

Explore Use Cases

- Drill Pipe Inspections
- Drill Bits and Downhole Tools
- Drilling Offshore and Deepwater
- Iron Fleet Maintenance
- Rigging and Lifting Equipment
- Mining Sites

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More Case Studies

Data Centers leverage RFID systems to automate the quality of service, security, and compliance critical to their operations. And IT vendors employ RFID source-tagging to move toward a Hardware-As-A-Service model, where they manage their own gear on behalf of their enterprise and cloud customers.



How can RFID systems be used to track data center IT assets?

- **High-density** - IT Assets come in high-density configurations which call for inventory methods that can be automated, work in bulk, and don't require equipment to be pulled out of racks.
- **Metal** - Data centers are metal-dense environments and RFID systems and tags require to be tuned to control stray reads and interferences.
- **Unique Identification** - Asset traceability and compliance are key features enabled with serialized ID encoding.
- **Hybrid Information** - Identification is encoded and printed to make it readable by both machines and people.
- **Tracking** - Handheld readers are best suited for flexible, on-the-spot, mobile checks, such as scanning a facility without having to remove any item, or identifying misplaced equipment.
- **Monitoring** - Fixed readers can be adapted onto server cabinets to automate real-time visibility at the rack level.
- **Interoperability** - Some IT Asset Management (ITAM) systems facilitated RFID integration by providing native support.
- **Embedded** - OEMs rely on customized tagging solutions that are embeddable in the hardware at point-of-manufacture to enable tracking features from cradle to grave.

Explore Use Cases

- [Data Center Automation](#)
- [IT Asset Inventory](#)
- [IT Vendors](#)

Ask Our Engineers



[More Case Studies](#)

Data Center IT Assets?



[Data Trak II](#)



[Slim Trak](#)

IT Vendors?



[Pico Plus](#)



[Server Trak](#)

Enterprise IT Assets?

Printable labels that are flexible and slim



[Platinum Metal Skin](#)



[Titanium Metal Skin](#)



[Delta Metal Skin](#)



[Mercury Metal Skin](#)

From waste management to telecom towers, utilities understand how to manage fleets of equipment in the field and leverage RFID tracking systems to capture the data needed for their operational efficiency.



How to achieve optimal performance tracking fleets in the field?

- **Outdoor** - Durable components that are weatherproof, waterproof, UV-proof, shocks and impact-resistant.
- **Long Range** - Tagging solutions that are cost-effective and deliver high-accuracy RFID reads on metal, plastic, and wood, over long distances.
- **Retrofit** - Tags and labels in a variety of sizes and profiles, and paired with durable mounting methods such as embedding, epoxy, heat-shrink tubing, adhesives, zip ties, screws, rivets, and magnets.
- **Fleet** - Support fleet management for assets in the field: Replacement, new items, direct tempering protection.
- **Unique** - Serialized tags encoded with unique numbers will enable item-level tracking and traceability.
 - **Customized** - Hard tags customized with text and/or barcode identification, as well as labels printed on-site, facilitate deployment and operations.
- **Software** - Utilities tracking projects typically rely on bespoke solutions, developed locally, however specialist vendors can offer speed, cost, and best practices.

Explore Use Cases

- Waste Management
- Weapon Tracking
- Telco Towers
- Smart Grid

Ask Our Engineers



More Case Studies

Durable identification?

All-weather hard tags with rugged attachments



Container Outdoor



Cargo Outdoor



Micro Industrial

Cost-effective tracking?

Tags with versatile mounting options



RTI Outdoor



Flex Outdoor

On-site custom-printed?

Rugged labels with adhesive

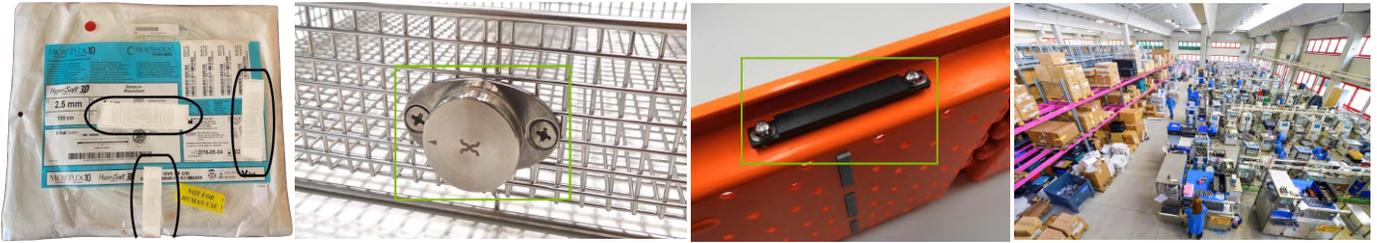


Mercury Metal Skin



Delta Metal Skin

RFID is used in Healthcare by medical device manufacturers, distributors, and hospitals to increase visibility and digitization into their most critical workflows.



Xerafy has created a variety of medical-grade and autoclavable RFID tagging solutions to support the digitization of medical device tracking, consignment inventory, sterile processing, and medical supply chain management.

What factors to prioritize when deploying RFID systems in Healthcare?

- **Patient Safety** - #1 priority for everyone from the institutions to the regulatory agencies, with a stringent evaluation of risks and benefits that applies to any new system.
- **UDI Traceability** - The worldwide agenda for traceability gives momentum to device manufacturers looking to leverage technology enablement.
- **Automation** - Tracking and monitoring automation helps hospitals incorporate safety and UDI traceability into their operations.
- **Sterilization** - Reprocessing procedures are based on manufacturers' IFUs and a facility's own best practices for cleaning, chemical treatments, and sterilization parameters by autoclave, EtO, E-Beam, or radiation.
- **Devices** - Tracking technology provides insight into managing field inventory, trunk stock, and consignment programs.
- **Equipment** - Surgical equipment, beds, and stretchers are easier and less contentious to track than patients and staff. There are tagging retrofit options available for any asset, workflow, and lifecycle.

Explore Use Cases

- Loaner Tracking
- Consignment Inventory
- Sterile Processing
- Medical Supply Chain

Ask Our Engineers



More Case Studies

Medical or Surgical Devices?

Autoclavable tags for trays, containers, cassettes



Roswell Autoclavable



Pico Silicone



Tray Trak

Medical supply chain?

Labels for high-value items, controlled substances



Mercury Metal Skin



Platinum Metal Skin



Titanium Metal Skin

Tracking Sterile Inventory?

Irradiation-proof labeling solution for converters



XSKIN Gamma

Find Your Tag

Xerafy offers seven series of RAIN RFID UHF passive Tags and Labels and a full range of Custom Design capabilities to power every project.

- [MICRO series - high temp](#)
- [PICO series - small](#)
- [XS series - world smallest](#)
- [ROSWELL series - extra strong](#)
- [OUTDOOR series - long range](#)
- [TRAK series - cost effective](#)
- [METAL SKIN series - printable labels](#)
- [XSKIN series - off metal inlays](#)
- [XENSE series - sensors](#)

About Xerafy

At Xerafy, we share the vision of the Industrial IoT. With our technology, manufacturers and end-users create smart assets, enabling more efficient business processes and new product capabilities.

Our mission: To push technological boundaries and solve the operational issues holding back Industry 4.0.

How We Got Started

Xerafy was founded by a team of experienced RFID tag developers who got together to solve a universal customer problem in managing small metal assets like hand tools, medical devices, IT equipment, and other supply chain.

Customers wanted tags small enough to embed or attach to their metal assets but rugged enough to survive extreme temperatures, humidity, and rough handling.

The team developed a breakthrough radio frequency antenna design to produce the world's smallest and most rugged mount-on-metal asset tag.

The company decided to name themselves Xerafy to symbolize the smallest tag to verify and quantify assets.

Since then, our technology has been distinguished by EY, Frost & Sullivan, GS1, RFID Journal, Alconics, and Red Herring.

The Company

Xerafy is headquartered in Singapore, and maintains sales and technical support offices in the US, UK and China. Xerafy's wholly owned manufacturing plant in China allows the company to guarantee quality as well as provide unique customization capabilities and cost advantages.

[Contact Us](#)

