Inventory: RFID Tracking

aegex10™ IS Tablets + Extronics iRFID500 Reader

The Hypothetical Situation:

An industrial oilfield facility stores equipment used for drilling and other oilfield operations. Personnel must locate the correct items to be used on each job and continually track the inventory of those tools to maintain supply levels and expedite operations.

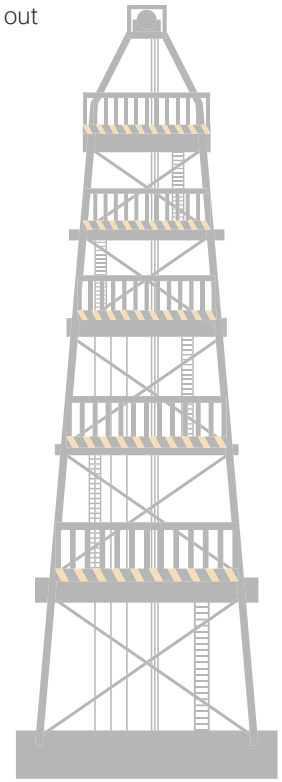
All inventory that is stored, moved, consumed, shipped or returned must be recorded in the company's online inventory system as quickly as possible. Real-time reports are also needed to verify inventory accuracy. Regular inspections must be conducted to ensure safety and other compliance standards.

Personnel currently identify the correct pieces of equipment to be used by visually locating serial numbers or barcode numbers on the pieces and matching them to the paper-based orders. This manual process is time-consuming and prone to inaccuracies, resulting in decreased efficiency and repeat searches to swap out incorrect selections.

Routine counts of inventory pieces are currently completed by hand with paper and pencil onsite, and inspectors later enter the data into the cloud-based inventory system.

The hypothetical company would ideally seek a solution that would simplify and expedite the processes of locating and inventorying the equipment. They would also want to implement digitized reporting and inspection processes that more efficiently and accurately assist them in meeting regulatory mandates.

In addition, maintenance is regularly required for equipment that cannot be removed from the location, such as a valve. That valve might be one in a row of multiple valves, so it is not immediately apparent which one requires maintenance. To improve efficiency, the company would want a tool that could help identify parts needing maintenance and quickly schedule the appropriate action.



The Challenge:

The main complication for incoporating technologies that could improve these processes is that the equipment is often stored in hazardous locations where highly combustible materials may be present. Not every area of a facility is extremely combustive all of the time, but in the event of an oil spill or other emergency, the entire vicinity could quickly become volatile. Thus, any electronic equipment used in these areas, including any computing devices, should optimally be certified “intrinsically safe” for IECEx Zone 1, ATEX Zone 1 or Class I Division 1 hazardous areas, where flammable materials are constantly present. Intrinsically safe equipment is designed to be incapable of causing a spark or generating enough heat that could potentially ignite an explosion.

Currently, in this hypothetical example, all inventory tracking is done manually onsite, and then data is transferred to online systems at an offsite (non-hazardous) location. Using passive Radio Frequency Identification (RFID) tags has been suggested as a costeffective and increasingly popular method of asset management, but the company needs to make sure this method conforms to the requirements for hazardous areas and will not pose a risk of explosion.

Requirements:

The company would seek a mobile solution that would improve the efficiency and accuracy of inventory tracking and record-keeping. Specifically, the company would like to be able to:

- **Track assets** such as drill pipes or other tools
- **Complete inventory counts** on weekly, monthly and annual bases
- **Record and report inspection** data onsite
- **Access real-time**, actionable reports
- **Be alerted** to potential issues before they become critical
- **Communicate** in real time with personnel
- **Demonstrate** regulatory compliance

To perform these functions, personnel would need a tool that can scan and track inventory, along with a corresponding mobile computing device that is certified for IECEx Zone 1 areas, that would help them to complete these tasks in real time.

ATEX Zone 1

IECEx Zone 1

Class I, II, III Division 1

The Proposed Solution:

The proposed technology solution for this hypothetical situation would be the Aegex10 Intrinsically Safe Tablet in conjunction with the Extronics iRFID500 handheld Bluetooth passive UHF RFID reader and iTAG500 series of passive UHF RFID tags.

1: Hardware - Aegex10 Intrinsically Safe Tablet

2 : Extronics iRFID500

Inventory:

Rather than searching manually for each piece of equipment, personnel could use the iRFID500 to scan the iTAG500 RFID tag attached to each asset and compare those each with order, thus improving accuracy in the selection of equipment for jobs. The iRFID500 could also make inventory counting exponentially quicker and more accurate.

Maintenance:

The Extronics iRFID500 can be set to scan each valve or other part in question, and it will notify the operator when the needed RFID tag is read, thus identifying the correct valve or part. The user's software can also be set up to pull up a maintenance inspection sheet on the Aegex tablet, so the operator could use the iRFID500's stylus to add notes and fill out the sheet onsite, rather than waiting to get back to an office or filling out paperwork onsite that then needs to be digitized later (which carries risk of human error in transposing the information, or of the paperwork itself being lost).

1. Hardware – aegex10™ Intrinsically Safe Tablet

Using the Windows-based Aegex10 IS Tablet, operators can access the Windows 10 apps, cloud services and third party apps approved by their organization, even in the most volatile hazardous areas (ATEX/IECEx Zone 1; Class I,II,III Division 1).

Certified for IECEx Zone 1 hazardous locations, as well as equivalent areas in Europe (ATEX Zone 1) and North America (Class I, II, III Division 1), the Aegex10 operates on Wi-Fi or 4G LTE from any hazardous location around the globe on a unified platform.

The 10.1-inch Aegex tablet is rated IP65 rugged for industrial use, yet is lightweight and priced as low as non-certified devices. Its Windows 10 operating system gives users uniform access to the Microsoft cloud, plus easily connects with apps and services, including tools like those of Extronics.

Oil & Gas | Chemical | Public Safety | Mining | Utilities | Pharmaceutical

Purpose Built

- **Rugged IP 65**
- **Certified by SGS to UL913 5th edition :** C I, II, III Div 1 Gr A-G T4, Tamb= -10° C...+50° C; CI Zo Gr IIC T4 IP65, Tamb= -10° C...+50° C
- **CSA 22.2 part 157 IECEx 60079:** Ex ib IIC T6 Gb, Ex ib IIIC T85° C Db IP6X, Tamb= -10° C...+50° C
- **ATEX:** II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T85° C Db IP6X, Tamb= -10° C...+50° C

ATEX Zone 1

IECEx Zone 1

Class I, II, III Division 1

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2. Hardware – Extronics iRFID500

Extronics, a U.K.-based manufacturer of technology solutions for industrial and hazardous environments, can provide a handheld Bluetooth passive UHF RFID reader to be used in conjunction with the Aegex10 IS Tablet.

The Extronics iRFID500 handheld Bluetooth passive UHF RFID reader helps streamline business processes, including tracking assets, monitoring maintenance tasks and planning, and demonstrating regulatory compliance.

This RFID inventory management solution tracks items' unique RFID tags and provides information about their movement and location. It connects via Bluetooth technology to smart mobile devices, such as the Aegex10 IS Tablet.

Hardware – Extronics iTAG500

Extronics also provide a comprehensive range of passive UHF RFID tags that are fully certified as intrinsically safe and designed for use in the most hazardous areas, in accordance with ATEX, IECEx, and North American standards. iTAG500 includes a large variety of tag options, including broadband operating ranges for global functionality, so customers can choose a tag that meets their application requirements.

With excellent read performance up to 35 meters in metallic environments that are common in industrial environments and round liquids, the iTAG500 range is extremely rugged and durable.

The Results:

With the Aegex10 IS Tablet and the Extronics iRFID500, stockyard personnel could enter the most volatile hazardous areas (IECEx Zone 1) and more easily and accurately locate the correct equipment, count inventory, and manage reporting without fear of causing an explosion.

Using the Aegex tablet and the Extronics iRFID500 with iTAG500 tags, inspectors could:

1. **Scan** the RFID tag of each piece of equipment with the iRFID500
2. **View** related documentation for each asset on the Aegex10 IS Tablet
3. **Record** inspection data on corresponding apps on the Aegex10
4. **Count** inventory and record data
5. **Share** data over Wi-Fi or 4G LTE
6. **Upload** data to a server for online storage

With the Aegex10 IS Tablet, operators could also use a number of Windows 10 applications to communicate information to teammates, such as:

- **Opening a Skype for Business** line to speak directly and show visually
- **Using Exchange/Outlook** to email photos or other data
- **Uploading information** to a Microsoft cloud-based platform

The Extronics solution can be used anywhere in hazardous locations via the Aegex10 IS Tablet. Tag reads are also viewable offline on the tablet when wireless networks are not available. The solution is transferrable across different geographies since the Aegex10 IS Tablet is certified worldwide. The Aegex10 IS Tablet + Extronics iRFID500 solution reduces mistakes in inventory management and makes record-keeping simpler and more efficient, even in hazardous areas.

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Contact Aegex or **Extronics** to **learn more.**

About Extronics:

Founded in 1992, Extronics is a leading global designer and manufacturer of intrinsically safe and explosion proof equipment. From our UK headquarters, we serve customers that work in potentially explosive environments, especially those in the chemical, pharmaceutical, petrochemical, oil and gas industries.

www.extronics.com

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About Aegex: A technology engineering and design company that provides intrinsically safe Industrial Internet of Things (IIoT) and mobile solutions for hazardous industries. Our globally certified intrinsically safe Windows 10 tablet, sensors and partner monitoring systems, form an IoT platform that manages big data to improve efficiency, safety and productivity in hazardous industrial environments in oil & gas, chemical, pharmaceutical, utilities, public safety, defense and other industries with potentially explosive atmospheres.

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