Ktrack Whole Goods Identification

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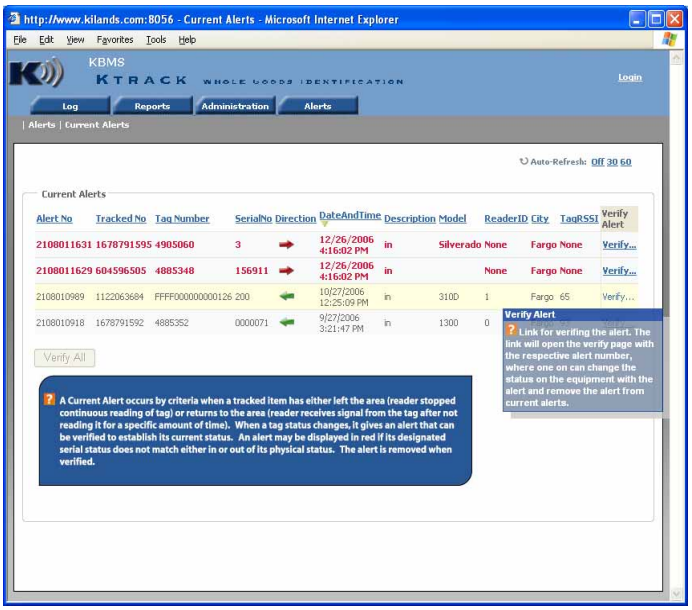
Kiland Business Management Systems

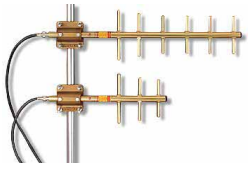
Ktrack
Whole Goods Identification
Rewards... in Real-Time

What is Ktrack? A whole goods identification system using radio frequency identification (RFID) technology which uses radio waves to automatically identify equipment via a reader to keep awareness of your lot's equipment in real-time.

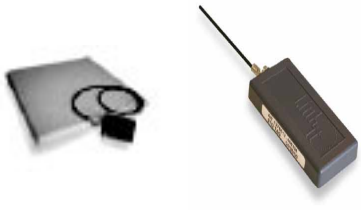
- Using RFID (Radio Frequency Identification) technology
- Tags installed on each piece of equipment and attachments
- Readers are setup to read all tags continuously
- Active tags can be read over 700 feet from readers
- Tags can be re-used as equipment is sold
- Readers are connected to the local area network (LAN) and wide area network (WAN)
- Real-time event monitoring and notifications
- Provide an immediate list of all equipment on hand
- Alert when equipment leaves the lot
- Alert when equipment returns to lot
- Reduce labor costs
- Reduce physical inventory costs
- Improve accountability
- Automatically e-mail alerts to selected individuals
- Optional Wi-Fi Network Access Points
- Designed for single or multiple locations
- Client-side Web based
- Accessible by all workstations thru web browser



The long range asset ID readers are specifically designed for hands-free asset identification and tracking solutions. The AA-R500 asset ID readers communicate with tags to capture the presence, identification and location of assets, people, vehicles and alarm triggered events. They provide long range coverage for real-time asset loss prevention, inventory management, and personnel access control and mustering.



Additional Yagi directional, Omni and patch antennas can be installed to provide extended coverage for reading rfid tags. Yagi antennas focus the transmit and receive power in a single direction. They are best used for fixed locations such as dealerships, yards, and remote locations trying to reach far away cell sites. Omni Antenna provides more power and farther distance in a 360 degree range.



The series of radio frequency identification tags permits hands-free employee access control and positive long range tag identification for real-time asset loss prevention, inventory management, and personnel/asset tracking. Tag to reader communication is “secured” to prevent tag cloning, copying or emulation, making tags ideally suited for high security situations. Tags employ an anti-collision algorithm that allows multiple tags to be simultaneously identified by a single reader, allowing assets to “authorized” locations, etc.

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KBMS Ktrack
Perpetual Inventory Control

Whole Goods Identification System for rental yards and other high value heavy equipment lots.

A whole goods identification system using radio frequency identification (RFID) technology which uses radio waves to automatically identify equipment via a reader to keep awareness of an equipment lot in real-time.

Equipment can be tracked two ways, perpetual and gated, using active and passive RFID technology respectively. In perpetual inventory tracking, RFID readers are continuously reading the RFID tag of each whole good and will alert the system by criteria when a whole good can no longer be read. Gated inventory tracking will alert the system by criteria when a whole good enters or leaves the lot.

For the most part, this implementation gives a rental business a complete immediate snapshot of all the equipment in the rental yard, creating real-time event monitoring and notifications. Also, this can generate work orders, invoices, notes, and alert emails automatically while interfacing with a central business system.

What this implementation solves is reduced labor and physical inventory costs and improved accountability in the rental yard. Many labor hours are spent tracking down missing equipment that has been though to be returned or just in the yard for sometime. Equipment leaves the yard on trucks after it supposedly was returned, stolen, or un-reportedly borrowed. Also, it solves the problem of delayed and left for forgotten paper work.

The implementation connects managing high value assets to the RFID industry. This, which includes the industry of heavy machinery usually consisting of equipment made of metals such as steel, while working in rugged conditions. So the challenge and problems include the active tags functioning by responding to the environments of metal, weather and distance, while securely attached to a whole good without being physically destroyed.

Traditionally, radio waves from an RFID tag were reflected by metals at these frequencies and reducing or diminishing signal strength by the currents metals produce. This effect reduces read-range performance and presents the tags less effective in the application. So needed, in this application is a tag for outdoor asset tracking on metallic surfaces. We found the AAID series active asset tags manufactured by Wavetrend helped accommodate this problem. The AA-T800 and AA-T800-IH series tags were suited for operating on metallic materials. This series of radio frequency identification tags permits hands-free employee access control and positive long range tag identification for real-time asset loss prevention, inventory management, and personnel/asset tracking. Tag to reader communication is "secured" to prevent tag cloning, copying or emulation, making tags ideally suited for high security situations.

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Tags employ an anti-collision algorithm that allows multiple tags to be simultaneously identified by a single reader, allowing assets to "authorized" locations, etc. The active RFID tags send a signal every 1.5 seconds. When the signal is read it can tell us its tag number, the node (reader that read it), network ID, receiver ID, the signal strength, whether this is a tamper signal (meaning someone removed the tag) or a standard signal, and life cycle of the tag. For the TG100 series tags designed for distance we used a 3/8" rubber pad to help insulate the signal against the metal on the whole good. This less expensive tag worked well on metal in closer ranges.

Another Challenge is the functioning read range of the tags and readers. The lot or yard size varies from site to site, but for most the distance needed is 300 plus feet. Needed, are long range readers in a schematic setup with antennas to help accommodate the distance.

The long range asset ID readers are specifically designed for hands-free asset identification and tracking solutions. The AA-R500 Asset ID readers communicate with tags to capture the presence, identification and location of assets, people, vehicles, and alarm triggered events. They provide long range coverage for real-time asset loss prevention, inventory management, and personnel access control and mustering. Additional Yagi directional and Omni antennas can be installed to provide extended coverage for reading RFID tags. 11Db Yagi antennas focus the transmit and receive power in a single direction. They are best used for fixed locations such as dealerships, yards, and remote locations trying to reach far away cell sites. This is a directional antenna that gives a 45 degree pattern, 600 feet distance, and 100 feet behind the antenna. 5Db Omni Antenna provides more power and farther distance in a 360 degree range. This is a pole antenna that gives a 300 feet radius read. Patch Antenna's have also been used, a directional antenna that gives a 45 degree pattern, 600 feet distance, and 100 feet behind the antenna. Additional 0Db Omni antennas are used for short distances and are inexpensive so it makes good use in areas inside a building.

Security solutions of theft and the tampering of tags is another issue involved in the implementation. AAID has a security solution for the AA-T800 Asset Tags, which activators a sensor if removed from its mounted base. The AAID's TamperDetect version of the AA-T8 00 Asset Tags is available to prevent anyone from removing a tag from an attached asset in order to illegally remove the asset from a monitored area. The sensors can instantly detect that a tag has been removed from an asset and send an immediate alarm signal to a reader. The monitoring application will alert the system immediately of the alert.

A web-based portal management system connecting the central business management system is used along with a linux single board server as middleware to process all tag activity.

One impact of this system is it didn't require any business practice changes. The information that they had to walk outside to find was now in front of them on their personal computer. A common complaint in the heavy machinery rental business is lost equipment. For some large machinery yards, those dollar values can add up into the high thousands each year. These lost items are most commonly attachments (ex. buckets to tractors and skid steers, or the forks on forklifts) and trailers. It goes unknown to whether they are misplaced, lost, not-returned, or stolen because of slow or forgotten responses in paper work or the inability to track the equipment down. This system gives a faster response and improved accountability in high value asset management.

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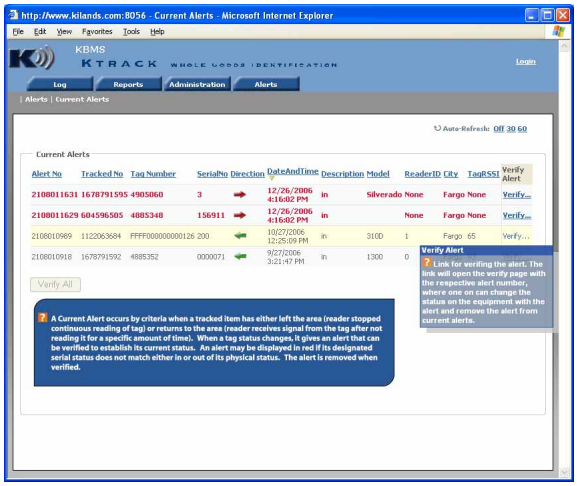
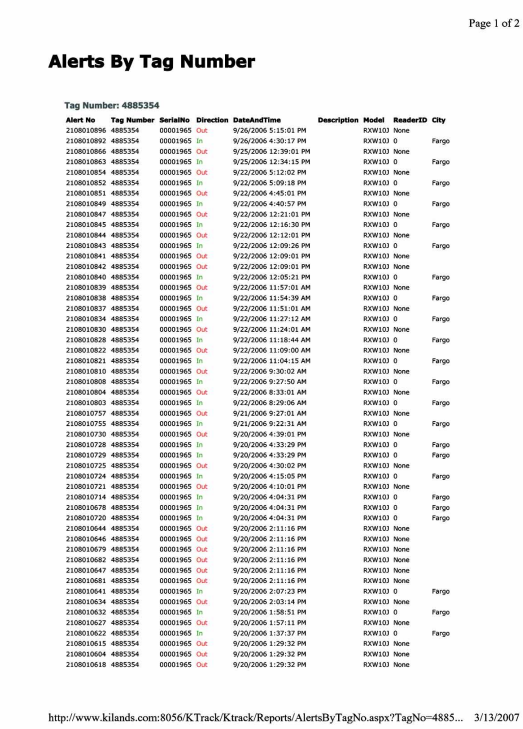
Alerts

The alert screen will display a list of serial numbers that have an alert from the reader. It can automatically e-mail alerts to selected individuals.

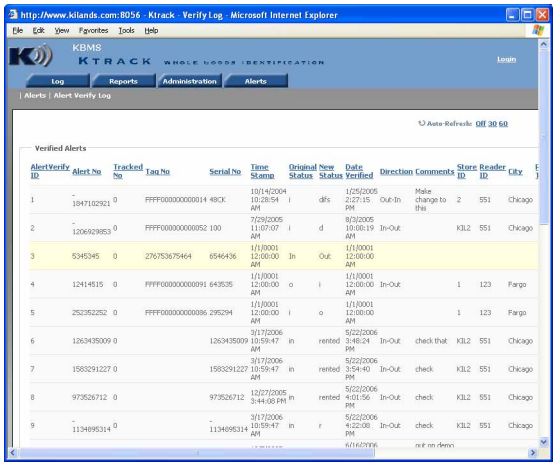


If the alert type displays IN-OUT the reader is unable to read that tag number. The tag number then needs to be verified to see why the tag is not being read. It is possible that the piece of equipment was sold, is out on rent, in for repairs, or missing from the lot.



Alert Verify Log

The alert log screen allows you to see the history of the alerts and the tags that have been verified and what their new serial status is set to.



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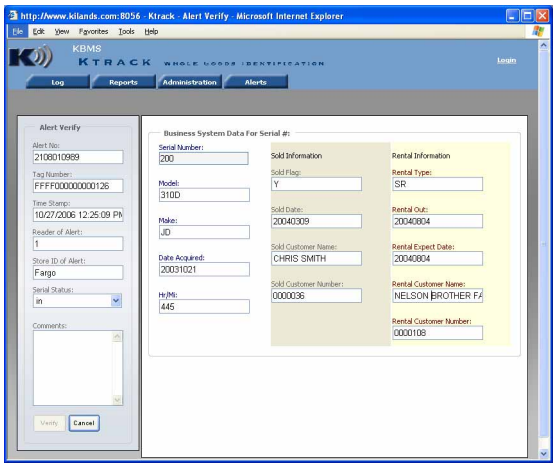
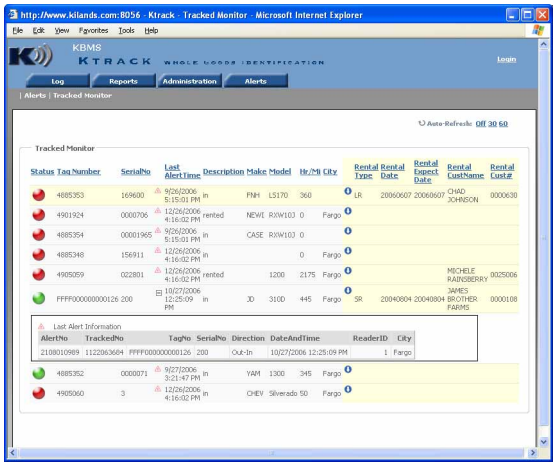
Alert Verify



Tracked Monitor

The monitor keeps a list of all serial numbers that have had tags attached to them. Tagged items can be sorted by tag ID, serial number, last time read, make and model. If there is a green dot in front of the tag ID, the serial number is in. A red dot means the serial number is out.



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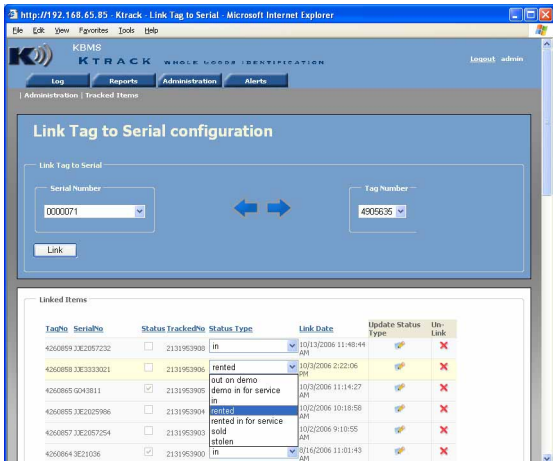
Link Tags and Serial Numbers

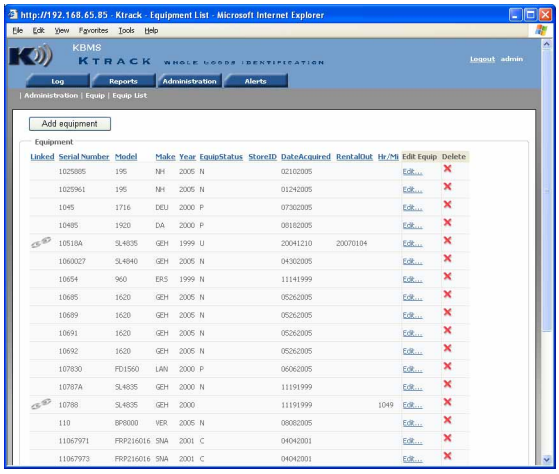
The link tags and serial number screen allows you to attach tag numbers to the serial numbers that they have been placed on.



When you click the down arrow on serial number it will display all serial numbers that do not have tags linked to them. After you select a serial number you will want to select the tag number that is assigned to the serial number. You will be able to see the available tag numbers by clicking the down arrow beside Tag No.

Equipment Information

The equipment information maintenance screen allows you to set up the information for each piece of equipment you have in your inventory. You can import the equipment information from your business system.



The information you will want to enter is the serial number of the piece of equipment, the model number, the make, the year the piece of equipment was manufactured, whether the piece is new or used, and the location of the piece of equipment.