PHILRO RFID Inventory

Fixed Assets Inventory Solution for AUTOLIV Factories

Introduction

Radio Frequency Identification, or **RFID**, is gaining greater acceptance and adoption as the costs reduce and the technology performance improves. Similar to barcode technology, RFID is applied with a unique tag which is associated with a unique asset — however, assets can be scanned at a much faster pace as the scanner does not need a line of sight to the asset tag.

With an **RFID asset tracking system**, you don't need to see or touch each item individually. In fact, RFID has the potential to provide instant accountability with the pull of a trigger or, in the case of real-time inventory solutions, even without any kind of manual operation.

RFID enables the use of mobile computers to locate missing assets with **smartphones** coupled with **mobile RFID readers**. Mobile RFID solutions allows a user to walk through an area and quickly capture all of the

RFID tags within read-range. A painfully slow process of physically searching for an asset can be reduced to finding that asset within minutes using a mobile RFID system.

PHILRO RFID Inventory enables proximity identification of fixed assets and equipment with the use of **UHF RFID tags**. The system records all types of assortment, equipment, materials and goods associated with correspondig RFID tags.

PHILRO RFID Inventory is custom developed to respect terminology, workflows and procedures used in **AUTOLIV factories**, so integration in existing workflows is immediate and painless.

Thanks to it, you will always know the location of your property, will have access to all assets movements and will be able to check who it's current holder is.

General Description

PHILRO RFID Inventory solution has the following hardware components: **RFID reader**, **RFID tags**, **Android smartphone** (for mobile application) and **Intel NUC computer** (for web application).
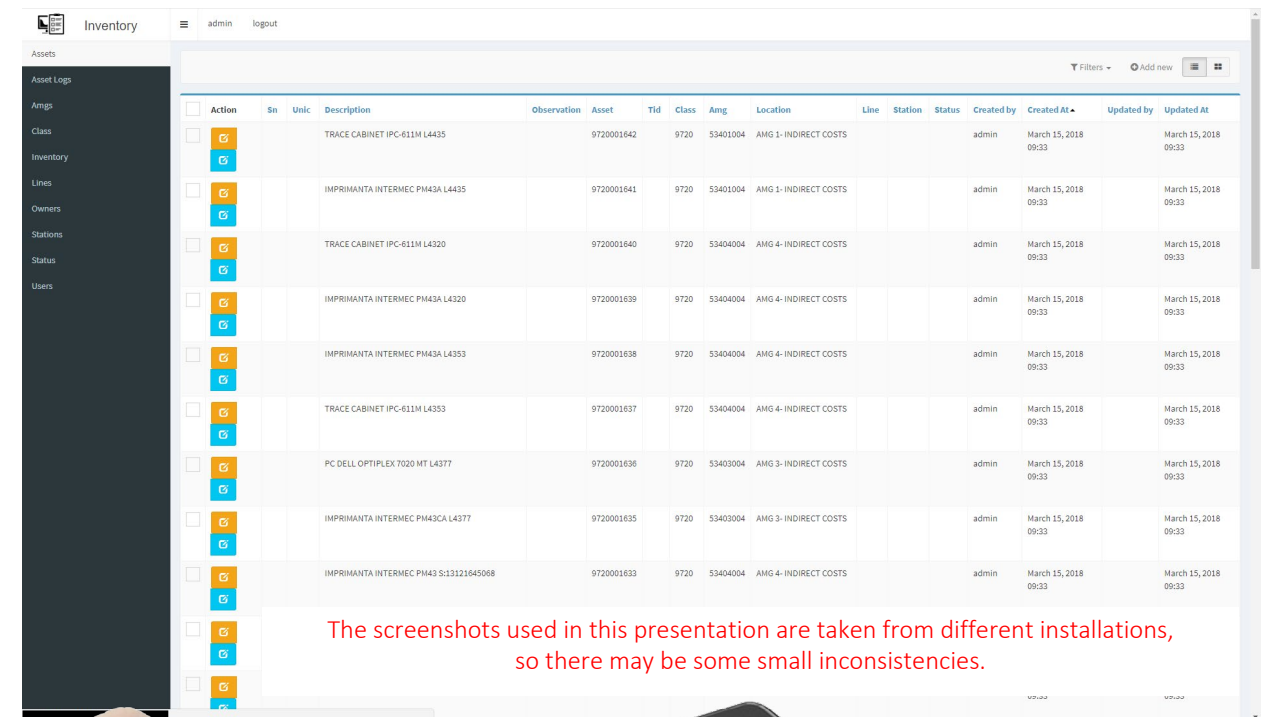All hardware components are high quality devices, selected and tested for a reliable functionality.

PHILRO RFID Inventory solution also has two main software components: **mobile application** and **web application**.

Mobile application is installed on the Android smartphone and is connected by Bluetooth to RFID reader. Web application is installed on Intel NUC computer and connected to LAN. Web application include a web server and a database, being securely accessible from any web browser, from any type of device (Windows PC, Apple Macbook, smartphone, tablet etc.).

Each asset is associated in application with a RFID tag and has attributes which reflects the organizational structure of fixed assets in **AUTOLIV** factories: amg, location, status, class, line, owner, station etc. The interface is straightforward and the operation is simple, users learning curve being a very short one.

Assets structure and attributes are entered into the system using web application. Also, existing assets already labeled with 2D barcodes are entered thru web interface, then mobile application must be used to associate them with a RFID tag.

The screenshots used in this presentation are taken from different installations, so there may be some small inconsistencies.

All images are for exemplification purpose only, the final RFID Inventory solution may have different components.

Operations

Mobile application is used to add new assets, bind assets with existing barcodes, check traceability and make inventory in specific locations. Mobile application is gathering data from RFID tags with the help of RFID reader and exchanges information with web application thru WiFi or GSM connection, all transmision being encrypted and secured with authentification credentials.
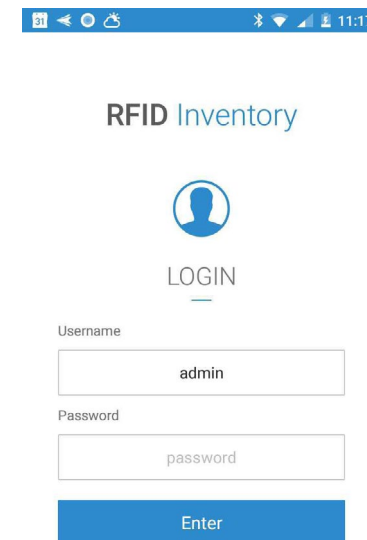
There are two ways to enter assets into mobile application: scanning existing assets' barcode (for assets already labeled with 2D barcodes) and then associating a RFID tag to them ("Bind" menu), or directly adding RFID tag to an asset ("Add" menu).

Web application is accessibile only by authorized users, which may easily filter information about any asset registered in the application and export it in Excel format, may audit at any time any asset and may generate inventory reports.

Using the web application, authorized users may always add relevant information like cost centers, locations, asset statuses, owners, classes, lines, stations etc.

Checking inventory is made by locations, using the mobile application and the RFID reader. This is a simple "walk around and scan" operation, using mobile RFID reader to identify and check the presence of assets in scanned locations.

All collected informations are transmitted to the web application and store in the database, for further audits and reportings.
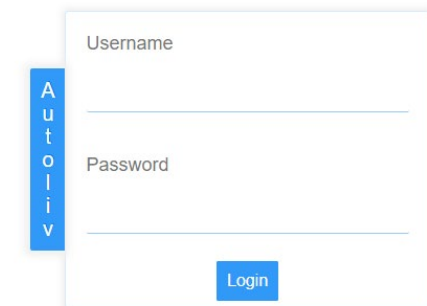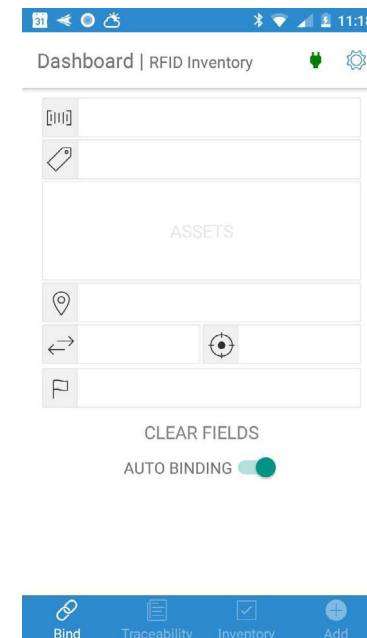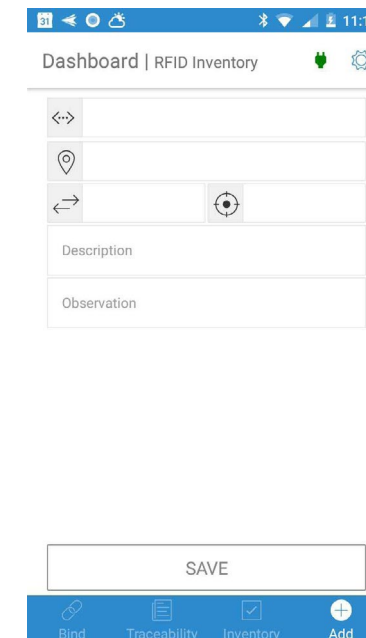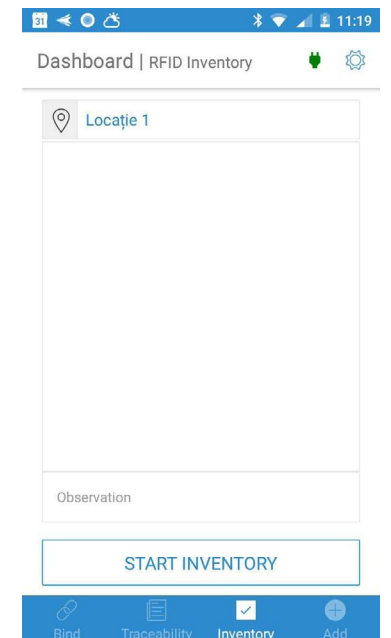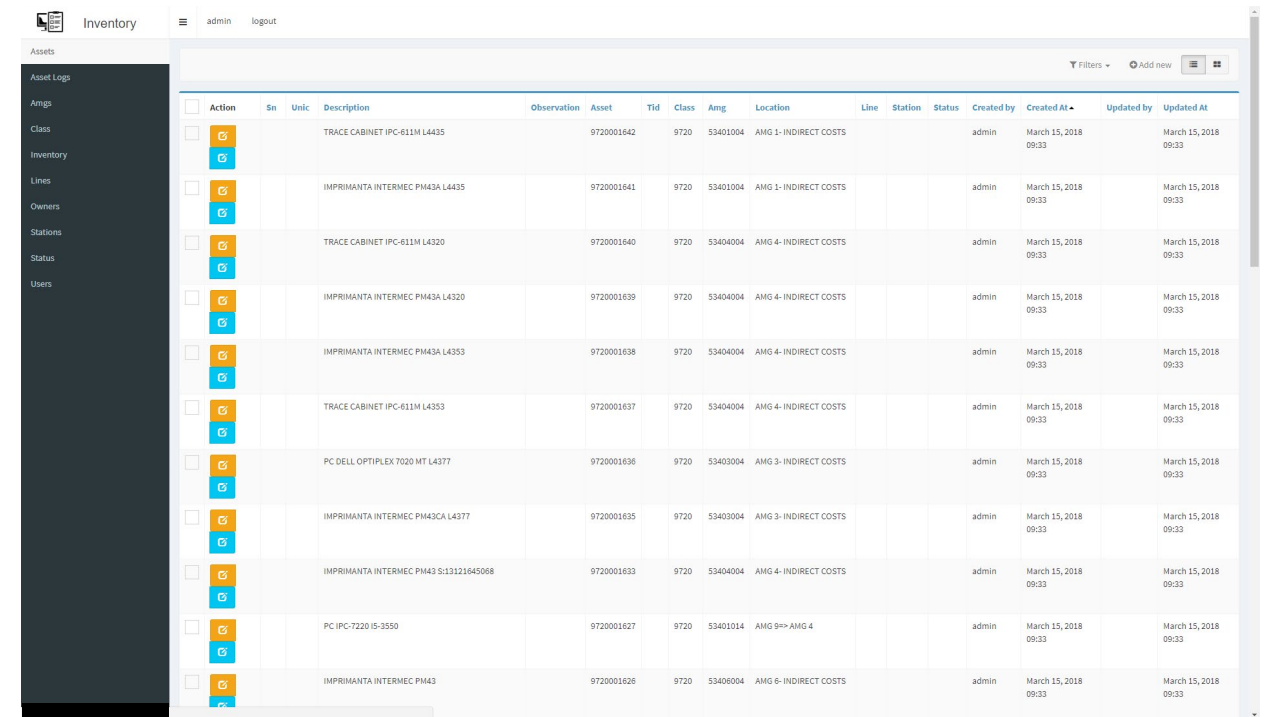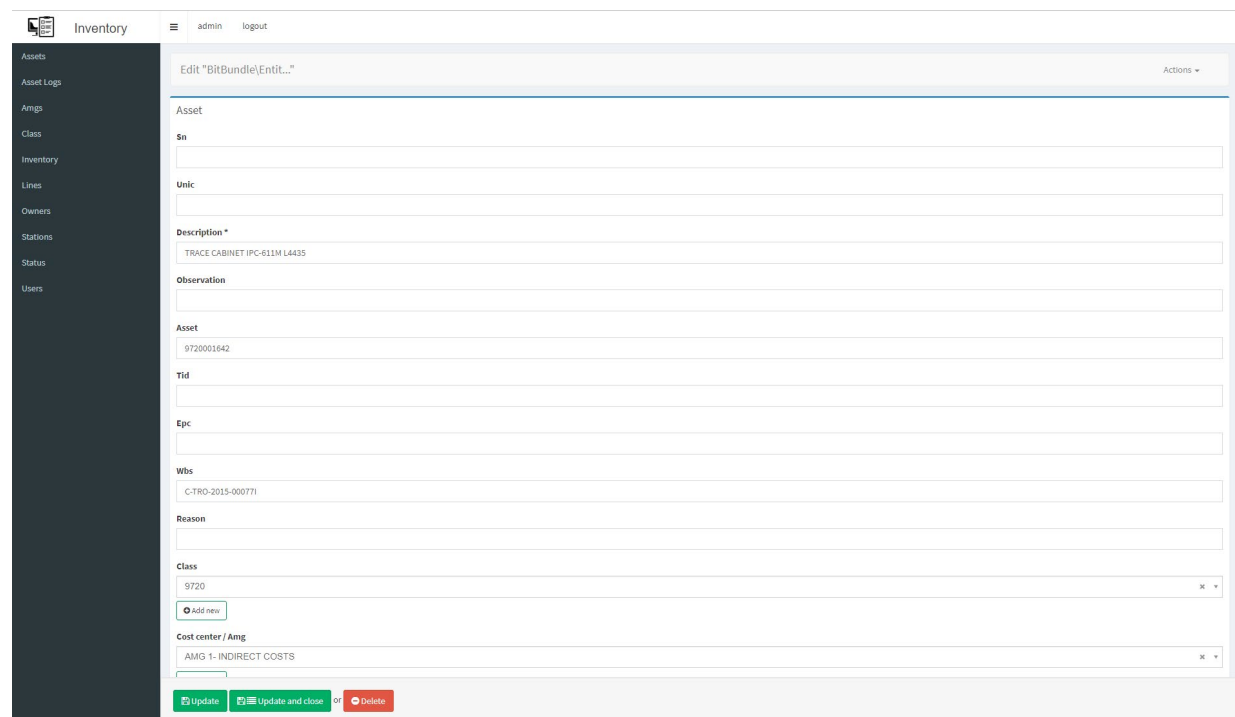
Web Application

Every asset registered in application has it's own specific atributtes: amg, class, line, station, owner, status etc. (up-right image).

All attributes may be entered or edited in dedicated web application's screens, accesible using the main menu, on the left side of the application's window.

Each asset line has two corresponding buttons. Using the *orange button*, the asset may be edited (down-left image). Using the *blue button*, the asset may be audited (down-right image). In this case, the application will generate an Asset Sheet in PDF format, which may then be exported or printed.

Mobile Application

Using mobile application, an operator may:

1. Bind existing assets and associate them with RFID tags.
Each existing 2D barcode is associated with a corresponding RFID tag.

2. Add new assets to the application.
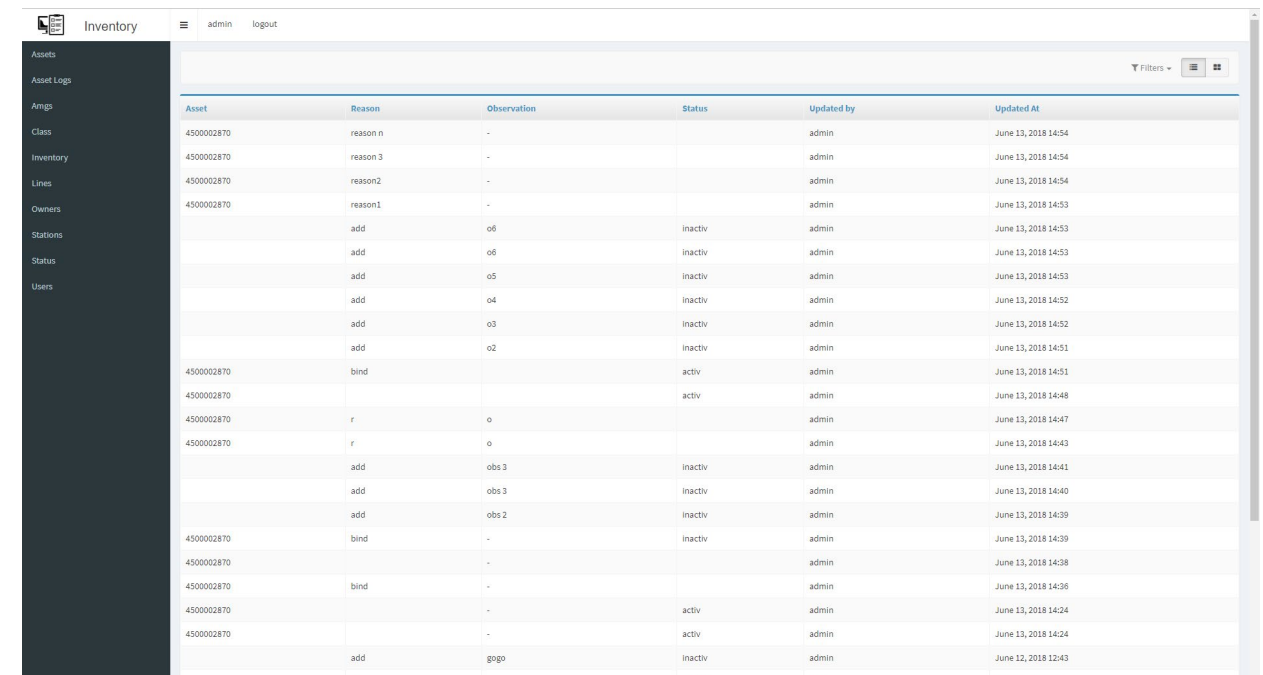New asssets are registered into the application and associated with RFID tags.

Please check this Youtube movie clip for a real time operational demo with mobile application.
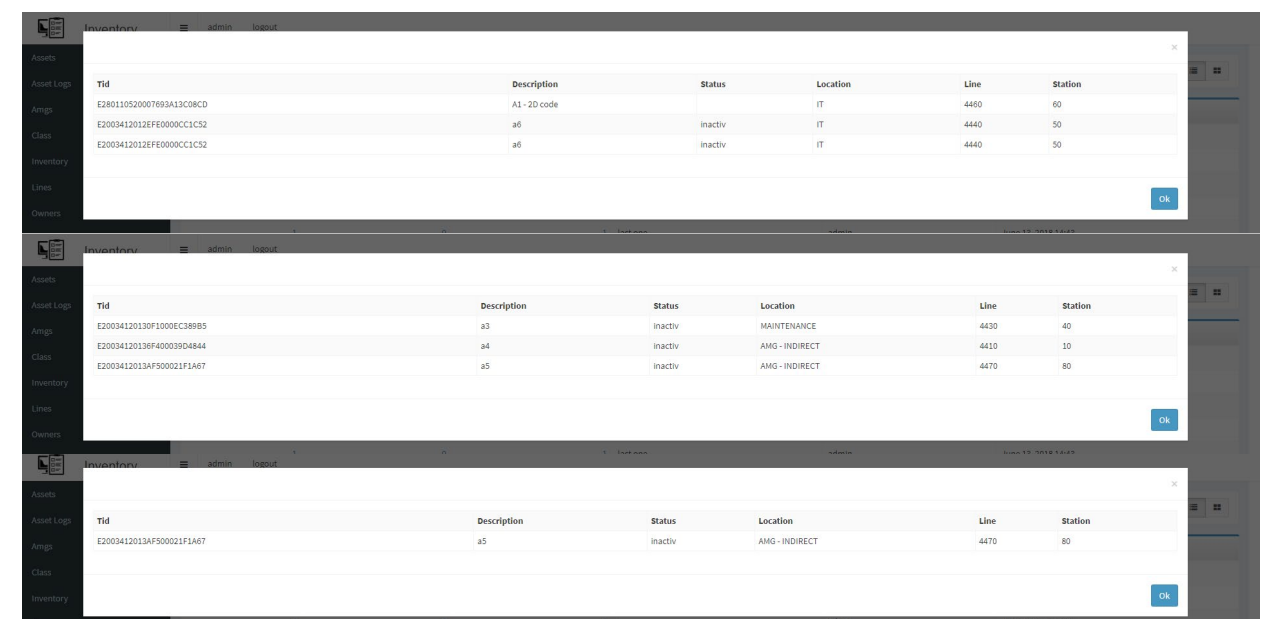
3. Traceability of assets attributes.
Every attribute (line, station, state etc.) may be added directly into the field, without the need to operate a computer. All editing operations are kept in the log list (up-right image) for further investigations.

4. Inventory of assets in specified location.
The mobile application is paired with a specific mobile RFID reader, the application being optimized for fast and easy inventory checks.
After checking inventory in one location, assets are classified as "found" (registered as belonging to location and founded), "unfound" (registered as belonging to location but not founded) and "exception" (founded, but registered as belonging to other location). Each category may be browsed individually from the web application (down-right images).
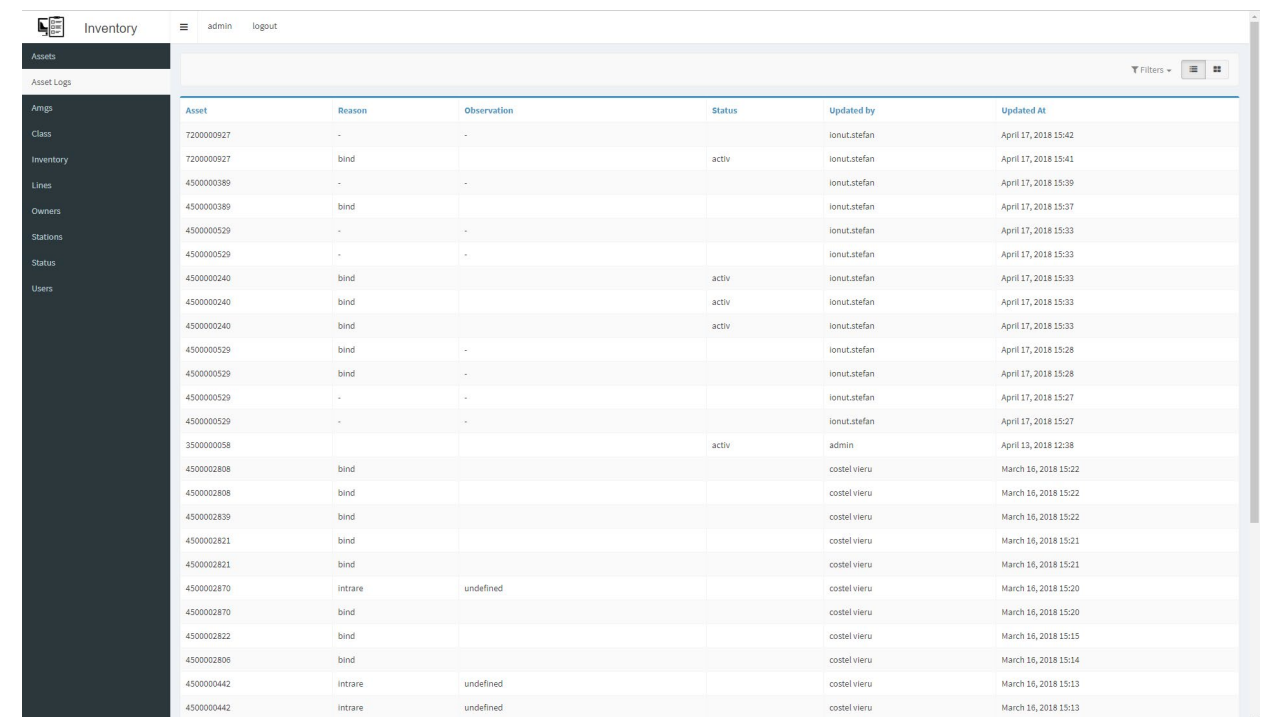
Inventory Results

From web applicaton, an authorized user may check, at any time, any inventory report log, for any inventory made with the RFID Inventory application (up-right image), thus assuring 100% traceability for every asset registered into the application. After checking inventory in one location, classified assets may be browsed individually for checking the corresponding category (down-left image). Even more, every changes made in the applicaton (a move into another location, a change in asset statuts, an owner change of a specific asset etc.) are logged and stored for any kind of future informational needs (down-right image).
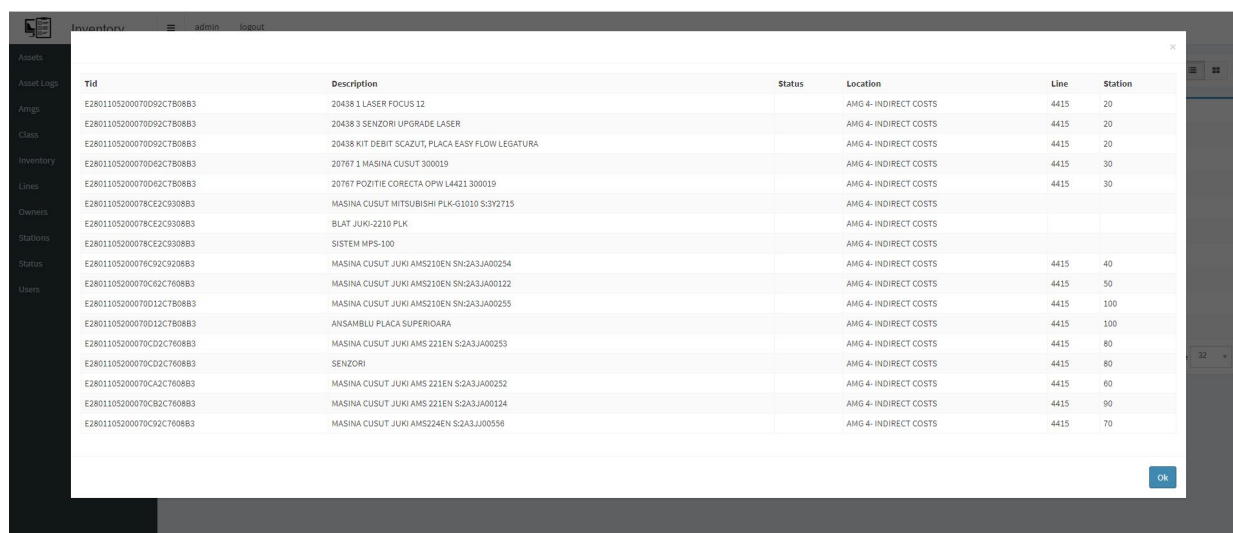
All relevant information in the databese may be filtered at any time and exported in Excel format, for reportings and statistical analysis.