

RFID Technology Implementation In Warehouse Inventory Management

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Background



There are inefficiencies in warehouses raw material Management due to implementation of physical segregation systems, namely:

- Storage space allocation because quarantine area should only be used to store quarantine items
- Working time / labor (Quarantine to release goods movement)

Reference

4.6 *Where quarantine status is ensured by storage in separate areas, these areas must be clearly marked and their access restricted to authorized personnel. **Any system replacing physical quarantine should provide equivalent security.** For example, computerized systems can be used, provided that they are validated to demonstrate security of access*

Guide to good storage practices for pharmaceuticals
WHO Technical Report Series, No. 908 Annex 9, 2003

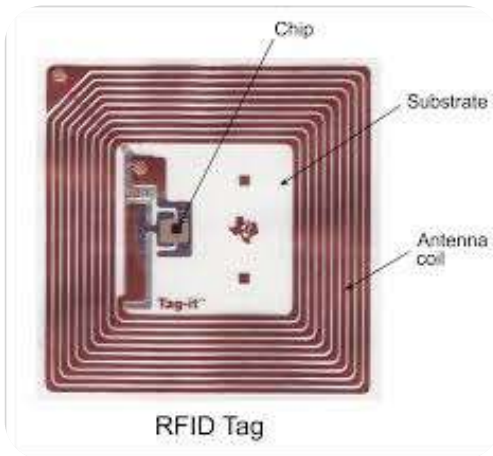
Proposed Solution

Implementation of RFID (Radio Frequency Identification) technology to replace warehouse physical segregation overcomes the problems of inefficiencies in Warehouse management.



RFID (Radio Frequency Identification) Technology

RFID a technology of transferring/sending data wirelessly by using radio frequencies, in order to automatically identify and track through RFID "tags" attached to an object.



RFID Tag



Advantages of implementing RFID in Warehouse



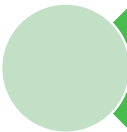
Efficiency in warehouse employee overtime costs



Storage space utilization efficiency.



Level of error in the delivery of inventory items to users will be greatly reduced



Increase security level, Material Location, Segregation by System



Real time reconciliation



Implementation of RFID Technology

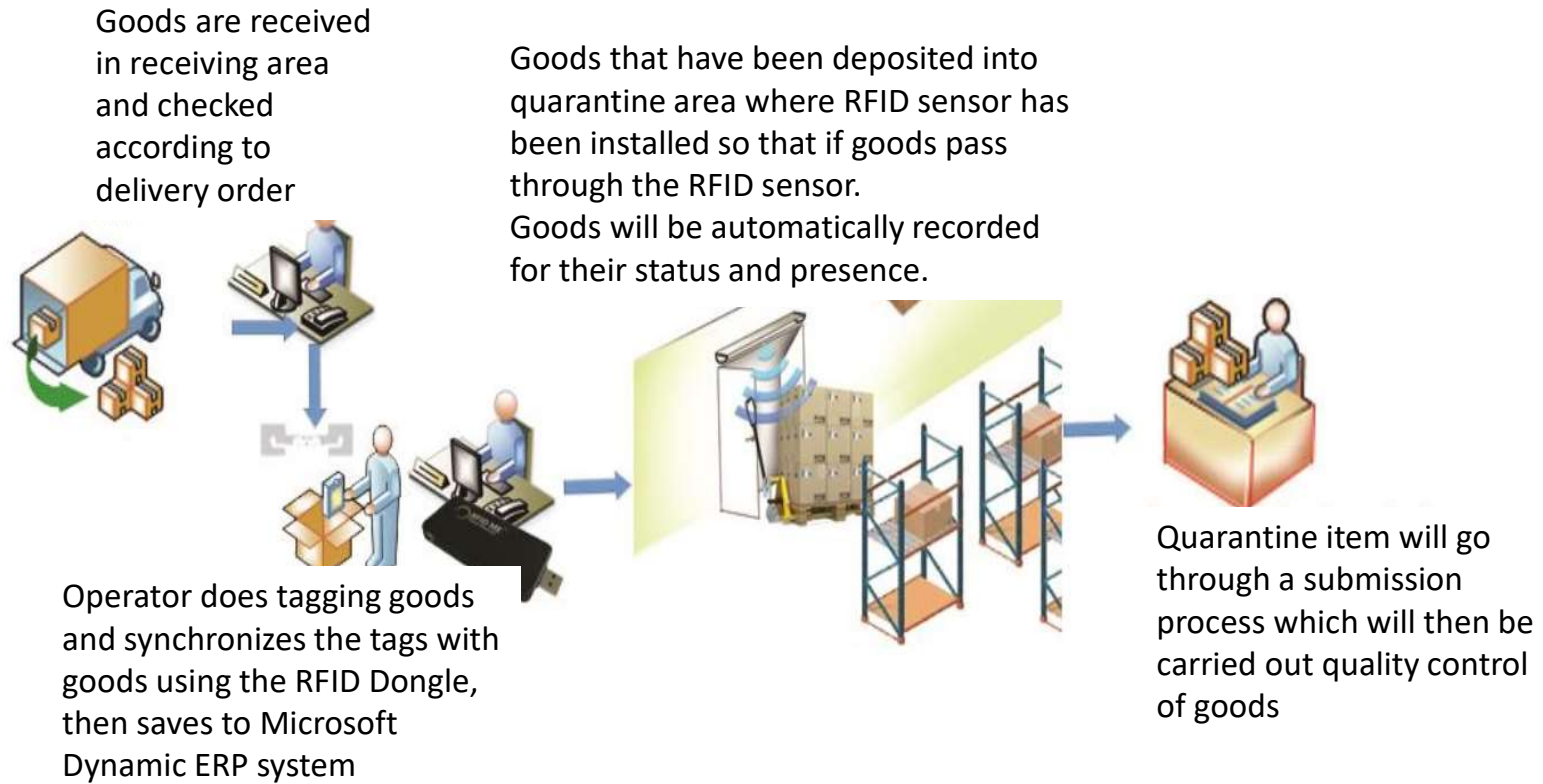
RFID technology can create virtual segregation between quarantine and release area that can replace physical segregation with an equivalent or better level of security.

RFID technology can prevent errors (type, quantity, and quality status) in the delivery of inventory items to users.

RFID system can be optimized to support implementation of business processes in Warehouse Facility.



Receipt of goods and Quarantine Process



Business Process of RFID Warehouse Management System



The process of testing inventory items

Quarantine item will go through a testing process which will then be carried out quality control of the goods



QUALITY CONTROL APPROVED



Operator will attach the release tag to make it visible to the eye



QC REJECTED

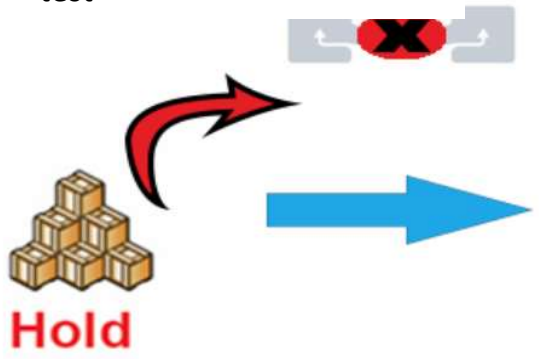
Operator paste reject tags on rejected items



Goods that have gone through the testing process will then be carried out quality control and the results will be reviewed by quality assurance. Quality status (release or reject) will be determined by QA. Status changed using an RFID mobile reader by scanning the tag on goods and determining the release or reject status.

Reject Area

Operator removes Tag from material that didn't pass the test



After process of removing tag from material then goods are returned to the Vendor



Non-returnable materials to vendors will be destroyed



Business Process of RFID Warehouse Management System

Release process of inventory items

End user orders goods, then warehouse officer checks the availability of goods whose status is released.

Items that have been picked up by operator are carried out through the RFID sensor door. Status of outgoing goods will be updated to ERP system automatically with RFID. RFID sensor beeps when operator pick up wrong item.



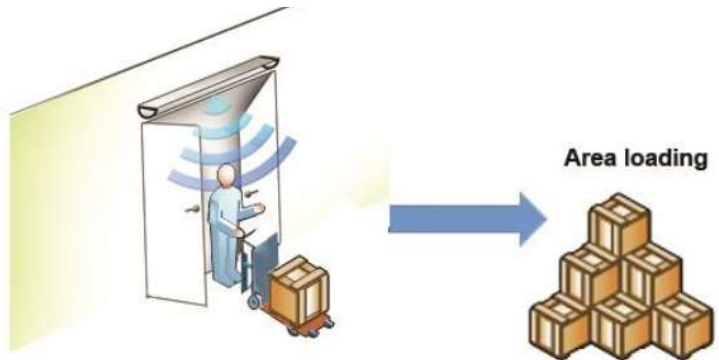
RFID mobile used by operator to search, scan and change status of goods to be sent.

Business Process of RFID Warehouse Management System

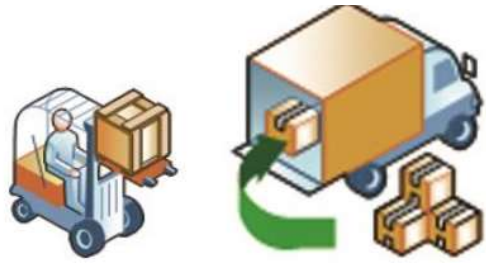


Distribution Process of inventory items

Items that have been picked up by operator are carried out through the RFID sensor door. Status of outgoing goods will be updated to ERP system automatically with RFID. RFID sensor beeps when operator pick up wrong item.



Goods are attributed to end users



When handing over goods to end user, RFID system will integrate with the inventory management (IM) system in each end user.

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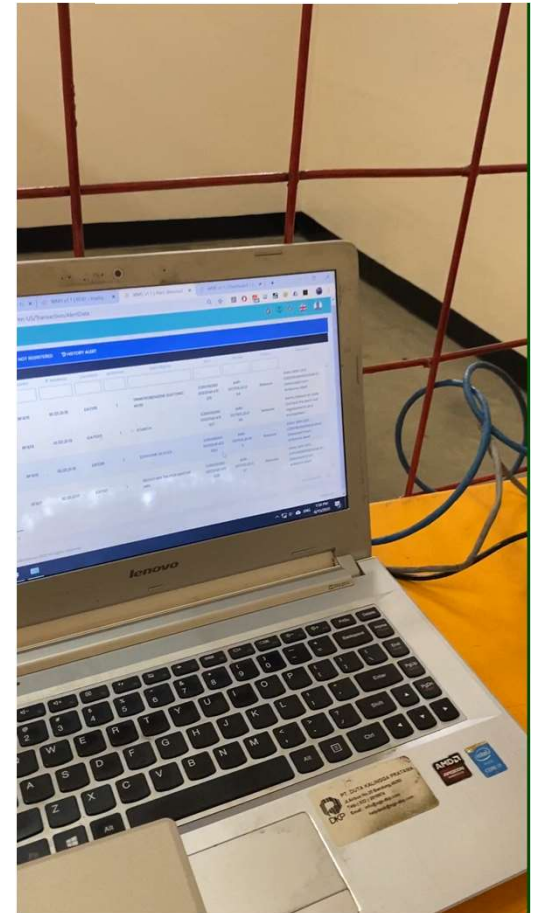
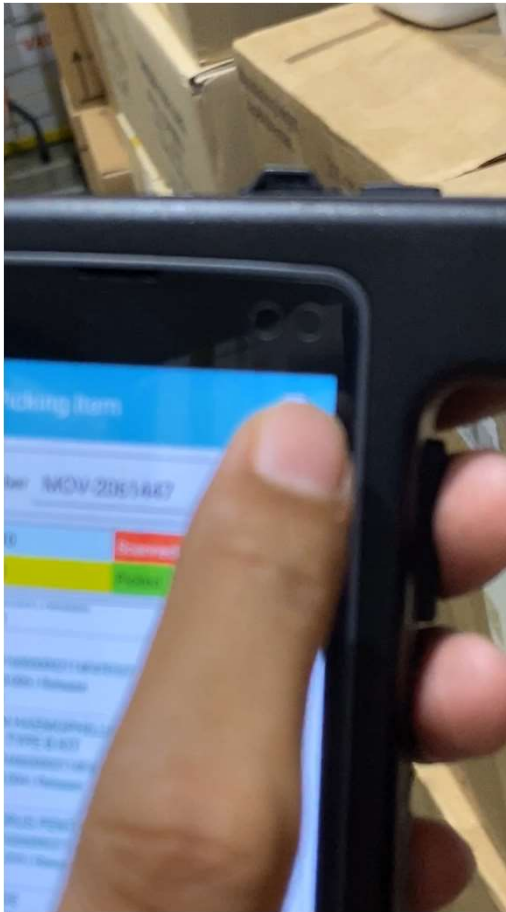
RFID Implementation

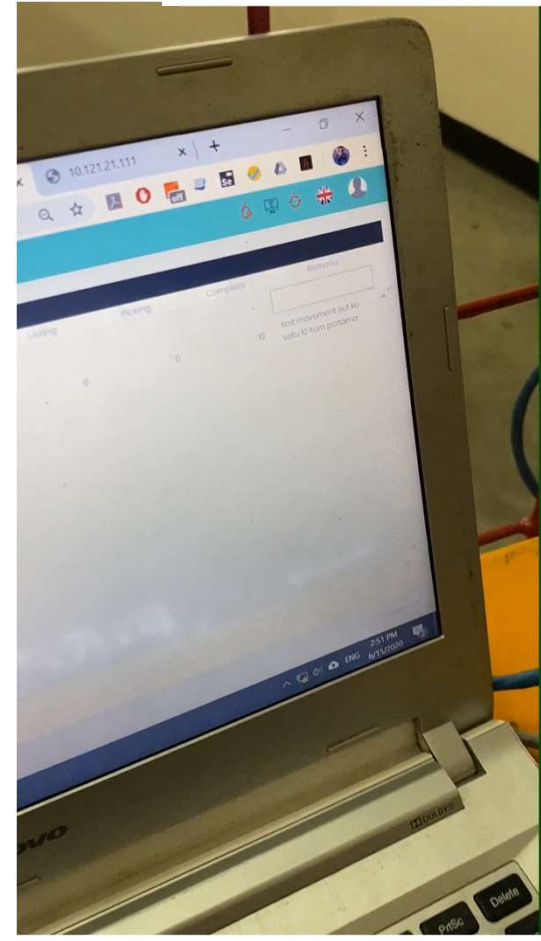
Process	Standard
RFID Tag Placement	RFID Tag placement can be well detected by system on goods with ; <ul style="list-style-type: none"> • Various types of packaging materials (Paper, plastic, glass / glass, metal) . • Various dosage forms (Non-metallic solids, powders, liquids. • Obstructed / squeezed positions.
Acceptance of Goods	The system can accurately detect; <ul style="list-style-type: none"> • Type and quantity of goods entering warehouse. • The presence of goods that should not enter the warehouse.
Storage & Picking of Goods	The system can; <ul style="list-style-type: none"> • Accurately detect type, quantity, and quality status of stored goods without segregation between Quarantined and Release goods. • Distinguish the goods that must be picked and those that are allowed to be picked.
Expenditure of Goods	The system can accurately detect; <ul style="list-style-type: none"> • Type and quantity of goods coming out of warehouse. • The presence of goods that should not come out to warehouse.

Tools & Systems Used for RFID WMS



- RFID Tag
- RFID Hand Held Reader
- RFID Gate
- RFID Dongle
- Coax Cable
- Internet Cable
- Power Cord
- Software RFID WMS (Warehouse Management System) Application
- Internet Connection via Wifi







Conclusion

RFID technology can be used for warehouse management non-physical segregation system with a better level of security and can improve efficiency of working time and storage space utilization.

Thanks