Daifuku the quick response to manage the

ASSIGN BUSTER

Daifuku MalaysiaSdn Bhd (Daifuku) developed the first automated storage and retrieval system(AS/RS) in Japan since year 1966.

One of their core business are factory anddistribution automation. Daifuku has the automated warehouse, storage spacesand sorting and picking system to satisfy the customer requirement in order todistribute for the retailers, wholesalers and warehousing. (Research and Markets, 4AD) This program is use to manage the every single stepof warehouse including receive and retrieval inventory, replenishment andpicking. The objectives for developing this AS/RS system in to achievingworkload reductions and cost savings through improvements in storageefficiency, labor saving in warehousework and improvements in management levels.

About forty years since using thissystem, automated warehouses have now become more capacity and high performancethrough the expansion of models, including stacker cranes and peripheralequipment.(Corporation, 2AD)Quick responsecode have become a convenient way to communicate amounts of information fromphysical objects to mobile devices. Quick response built up a lot of businessopportunity to speed up the flow of information and merchandise betweenretailers and manufacturers and the warehouse system. Daifuku is using thequick response to manage the warehouse system by many way. Quick response usedinformation technology, flexible processes and organizational structure tomanage product and services in order to make it efficient and convenient. Nowadays, the number of user and use is increasing and quick response isencourage to researchers and industries in developing business and convenientin order to reduce error. Radio-frequencyIdentification (RFID) is an equipment that used

in hundreds of applicationssuch as race-timing, assets tracking and tool tracking.(Ustundag, 2013) Besides, RFID is a wireless non-contact use of radio-frequencyelectromagnetic fields to move the data for identifying and tracking tagsattached to assets.

RFID is able to identify from distance unlike the barcodetechnology. Its support a large set of ID than the barcodes technology and canincorporate additional data from different way such as product type andmanufacturer. (Amit and Berghel, 2011)RFID technologyconsist three part in two combination, a transmitter or receiver and one of itcall antenna as a RFID reader. This two will combine and make a RFID tag. Whenthe FRID tag read, it will detect the radio signal that activate the transmitteror receiver. (Pateriya and Sharma, 2011)There are manyuses of quick response technology around us today, one of the quick responsethat use by Daifuku is RFID.

Daifuku is using RFID to the receivinginspection. Daifuku was using barcodesoperation with semi-automated to scan the label when received before they usethe RFID technology. It need several time to operate to complete it. (Kaur et al.

, 2011)Besides, once the products scanned, they have tochange a new label after the new orders. So, in order to reduce the labour costand time, Daifuku use RFID technology to replace the barcode technology. Theoperator only need to pass the RFID reader gate by carrying all the toteinformation. Order picking, which is a key task in a warehouse that refer to the operation through whichitem retrieved from storage locations to fulfill customer orders.

The orderpicking system is designing to identify the picking are understanding thestorage system and determine the storage policy like picking method, piking strategy, material handling system and picking assist technology.

(Pan et al., 2012) Order picking process is receiving goods in an amountunit size and retrieving them from storage. It is a labor-intensive activity. Recent industries have change the traditional trends by using the automatedsystem to run this task. However, the modern warehouse order picking is makinggoods quickly to satisfy the customer requirement. This is due to the flexiblethat able to meet the needs of the large customer base and huge amount of item.(Liu et al., 2015) Besides, it also can help in reduce the labor costthat operate on the picking task.

Furthermore, it also require high quality andthe item security that the product can available and deliver on time for thecustomer. The order picking activity has easier compare to the traditionalorder picking because it only need the operator to give command to theautomated system to do the picking.(Pan et al., 2012) Daifuku is using three type of picking system inorder to increase efficiency and accuracy to do picking that is pick-to-lightsystem, picking cart system and put-to-light system. One of the picking systemthat used RFID is picking cart system. Picking cart system is the operator willset an order to the car display and scan through the RFID to confirm the typeand quantity of pick items.

The cart system will automated pick those itemneeded that the instruction given. The cart system is a walk through pickingequipped with totes, weight

scale and the inspection devices that is RFID. 2. 2 Automated system and Retrieval sysytemAS/ RS is anequipment in order to manage the inventory and material handling.

AS/ RS iswidely used by a major automated manufacturer or warehouse. (Salah et al., 2011) AS/ RS can briefly meant as combination of machineand controls automatic store and retrieve inventory speedy.

(Research and Markets, 4AD) Daifuku used AS/ RS to manage the logistic system. AS/ RS used in automated manufacturer and warehouse and play an important rolein production systems. One of the AS/ RS is Unit load AS/ RS. (Chakole, 2013) This is one of the popular AS/ RS system around theworld. The unit load of AS/ RS has a flexible design up to 40 meter andversatility make Daifuku's Unit load AS/ RS the best-selling of AS/ RS. Thesecond AS/ RS is mini load AS/ RS.

Mini Load AS/ RS used to carry small amountweight that are in bins or shelves in the storage system. It provide thefastest and efficient storage and retrieval containers.(Rashid et al., 2011) It help in high speeds to ensure the item carry forthe order picking and production operation on time. Besides, Daifuku also usedthe rack-supported building AS/ RS. The rack supported building AS/ RS is aracking constructed as a building with a codes. It help the space efficient andreduce cost due to the high rise AS/ RS.

In addition, vehicle type mini load AS/RSalso one of the AS/RS system that used by Daifuku. Vehicle type mini load AS/RS is a fast and vehicle type AS/ RS designed to provide space and function bygroup. 2. 2. 1 Easier storage

spaceBasically, theAS/ RS will be able to recommend suitable storage space to the operator toplace the item or Stock Keeping Unit (SKUs) at the certain space.

Thisinventory management system able to control and tracking include easier storagespace.(Sproles and Kuehn, 2014) Daifuku is using the mini load AS/RS to manage thewarehouse. The mini load AS/ RS maximize more vertical space as building thanthe shelves systems.

The SKUs is placed vertically on shelves with highprecision to utilize the storage density. Many researchers found that design ofAS/ RS with the vertical rack is consider have larger storage space to storethe inventory or SKUs. Both AS/ RS offer high-density storage capacity with awide space. (Chakole, 2013) Besides, it also suitable for storage of heavy itemson shelves units especially the racking system in building AS/ RS. This able toDaifuku to reduce cost and utilized the storage space. The effectiveness ofpicking order also can reduce lead time and labor costing in order to theefficiency of inventory storage.

Furthermore, by using the AS/ RS to store theinventory with systematic, it is easier to know where the product placed andthis will reduce the time to track the inventory. Daifuku will able to managemore inventory and maximize the use of warehouse space. Daifuku's AS/ RSrequired a high level of above keep with the high technician and mechanical. 3. 0 RecommendationIn order to runthe RFID and AS/ RS smoothly, Daifuku recommend to send their employee totraining and have some course to understanding how the equipment run andoperate.(Whittington et al., 2011)

Once the employees know how to operate the AS/ RS andRFID, it will help to reduces the human error that will course to the runningdown of equipment or human error. Besides, Daifukucan hire some professional that know at the maintenance equipment in order toreduce the cost if some of the minor problems detect from the AS/ RS or RFID.

(Sproles and Kuehn, 2014) By hire a professional, Daifuku can save up some ofthe maintenance fees especially for the minor problem from getting outsourcesto do the maintenance. 4. 0 EvaluationThe disadvantage ofusing the RFID and AS/ RS technology is it need the high maintenance fees inorder to keep the effectiveness of the machine. The main purpose to themaintenance is to ensure the equipment run and operating smooth and fullyefficient all the time.

(Ustundag, 2013) It need to have inspection on all those equipmentin order to constantly having a well productivity. If the problems found, it need to make anadjustment and correct before the major problems detected. An equipment rundown true cost is difficult to estimate and of course it need a higher cost todo the maintenance compare to the labor and material if need to make repair. The next disadvantagethat bring from RFID and AS/ RS is professional needed in operate thosetechnology.

The AS/ RS and RFID required skills, experience and knowledge tofunction it, In order to hired a professional to operate this, Daifuku need togive some training or bring out the professional to operate this kind ofequipment.(Hu et al., 2016) (Gulcharan et al., 2013)This need some times and money to give some course to those selected to operatethe equipment. Besides, especially

the AS/ RS has a lot of sub systems tomemorize. So, Daifuku have to do this expenses to send them to the course inorder to make sure them know well of all this equipment.

5. 0 ConclusionIn the nutshell, Daifuku have a high quality in manage the warehouse by using the quick responsetechnology where is RFID and AS/ RS. By using the RFID technology, Daifuku willable to fast order picking with those system. The order picking activity haseasier compare to the traditional order picking because it only need theoperator to give command to the automated system to do the picking. Besides, the AS/ RS also help Daifuku to manage the storage space in order to utilizethe space as well due to those AS/ RS such as the mini load AS/ RS is avertically building to store the inventory. It save a lot of space and easierto pick and put the inventory on the shelves by using the machine operate. Thedisadvantages that bring out from RFID and AS/ RS is high maintenance feesrequired and professional required in operate them.

Daifuku recommend to trainthe employees to ensure them understanding the equipment well and reduce themaintenance fees by hiring the professional.