NEC’s image recognition technology improves shipping process by reducing costs and time of shipping inspections.

Overview

NEC has developed the logistics industry’s first Warehouse Product Inspection System, which is being used by Yamato System Development (YSD) to streamline shipment inspections for catalogs, pamphlets, manuals, and medical package inserts that do not have product IDs. This system has led to a 20% reduction in costs and time for all warehouse operations. Improvements in inspection accuracy have also translated to improved shipment quality.

Challenges

Streamlining of inspections for products without product IDs

A large amount of time and effort were being spent on inspections in the logistics outsourcing business of YSD, so the company was looking for ways to streamline these operations.

“In pre-shipment inspections, expert operators were responsible for inspecting the products visually and had to refer to documents multiple times to check that there were no mistakes,” explained Mr. Hiroshi Maki, Executive Officer of YSD and President of YSD’s logistics outsourcer e-logi Solutions Company. “We wanted to create a labor-saving system, but we did not receive a positive response from the vendors we contacted. Only NEC enthusiastically raised their hand to help us with this project.”

Mr. Takeshi Hirata, Head of the YSD’s On-Demand Center at Haneda Airport, specifically requested NEC.

“We wanted to invest in ICT and build a system that could inspect the number of items by weight as well as identify products based on photographs,” said Mr. Hirata. “This would allow us to eliminate the pre-processes of selection and confirmation and bring efficiency to the entire operation. We also asked NEC to make the response time for inspecting one item to not exceed three seconds.”
NEC provides advanced image recognition technology to meet the customer’s development needs

The Warehouse Product Inspection System developed by NEC identifies products by comparing product photographs taken by cameras installed on workbenches with pre-registered product image information. The system also simultaneously identifies product quantities by comparing the weight of each product measured by a weigh scale installed on each workbench with pre-registered weight information. By utilizing NEC’s high-accuracy image recognition technology, matching images are accurately extracted and products can be identified, even if the products in the images captured by the camera are partially hidden, only part of the product is photographed, the product is reflecting light, or the product is tilted or crookedly placed. Furthermore, for products that are difficult to photograph, inspections can be performed visually from the start because the system also incorporates a sub-function that facilitates visual inspections so that master information can be confirmed on a screen.

The Warehouse Product Inspection System can also be linked with YSD’s cloud-based warehouse management system enabling integrated management of product master data, shipment instruction data, and actual inspection data.

- System configuration

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Control terminal
Database / WMS interface server
WMS (warehouse Management System)
Camera (image recognition)
Scale
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- Inspection unit (1)
- Inspection unit (2)
- Inspection unit (n)

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Results

Inspection costs and time reduced by 20% by implementing ICT management that links all work lines

The newly developed Warehouse Product Inspection System is a pioneering logistics system that simultaneously inspects products based on both image and weight during shipping inspections.

“Until now, we have been working with the Haneda Airport On-demand Center to promote the adoption of NEC’s Warehouse Product Inspection System so that we can improve the efficiency of YSD operations,” concluded Mr. Hiroki Nakamura, Branch Manager of the East Japan Logisys Branch Office. “But based on this success story, YSD is now looking to promote external sales of this system in collaboration with NEC. We have three on-demand centers in Japan: in Tokyo, Nagoya and Osaka, and we are thinking next to adopt this system in our Osaka center. We are also planning to conduct demonstration tests for inspecting 3D objects without barcodes.”

About

YSD was established following its split from the computer section of Yamato Transport, and has been developing and operating the TA-Q-BIN (parcel delivery service) system for many years. By utilizing its development and operations know-how, as well as its extensive network and infrastructure assets, YSD is expanding its business to provide solutions to customers in a range of different industries. As a “Business Process Efficiency Partner”, YSD is leveraging ICT to help its customers improve the efficiency of their business processes.