

# The Co-op Tohoku Case of Introducing the EPC/RFID



CO-OP TOHOKU SUNNET Consumers' Co-operative Federation (Co-op Tohoku) is a group of organizations that is made up of nine co-operatives in six prefectures in the Tohoku region, with the Miyagi COOP at its center. The group is headquartered in Sendai, and the total membership of its affiliated co-operatives is about 1.65 million.

Co-op Tohoku began operating a new integrated distribution center for dry foods in September 2015. Four facilities that had previously been operating separately were consolidated for the purpose of streamlining the distribution functions of Co-op Tohoku as a whole, and new systems were put in place to resolve several issues. The new systems include the management of the transport equipment system using GRAI (Global Returnable Asset Identifier).

## Measures to Counter Losses and Thefts of Transport Equipment

Previously, Co-op Tohoku's distribution bases were divided into four: a Food distribution center (for food), a Household goods distribution center (general goods, clothing), a Sunnet Joint purchase Distribution center (group purchases)

and the Tohoku branch of the Japanese Consumers' Co-operative Union (Co-op PB). In addition, the distribution of goods for home delivery and for stores was operated separately. The new distribution center was constructed to increase the efficiency while lowering the costs. They decided to introduce an EPC/RFID system in order to reduce the loss of foldable containers, cage trolleys and roll cage, and improve the distribution management system.

The problem with the foldable containers and cage trolleys was that many were being lost or stolen. In the worst year to date, over 10 percent were either lost or stolen in a year. The shortages of the transport equipment lowered the operational efficiency in the distribution center, required repeated rental costs, and incurred additional delivery costs in order to share equipment between stores, specifically serious during busy periods.

They decided to manage each individual asset rather than just looking at the total amount of assets and installed EPC/RFID systems to identify the place where the equipment was lost.

## 450,000 Pieces of Transport Equipment Targeted

The introduction of the management system using the EPC/RFID aimed to:

1. Improve the operational efficiency – save on the time needed for managing the transport equipment
2. Improve the management accuracy – understand the exactly appropriate quantity and durability of the transport equipment with a better visibility of their use
3. Improve the value of the customer service – communicate the Co-op's latest efforts to its members

Compared with barcodes, RFID tags can be read even from a few meters away, when surface is dirty, or through a cover as long as the cover is not metal. Moreover, multiple RFID tags can be read at once. By taking advantage of these points, the total workload can be reduced.

The transport equipment involved in the system included: 400,000 foldable containers for group purchases, 37,000 foldable containers for stores, 3,000 cage trolleys for group purchases, and 7,400 roll cages for stores.

There were points to consider when choosing EPC/RFID tags for their transport equipment.

- 1) For budgetary and cost reasons, the company wanted to use the same types of tag for all transported equipment.
- 2) The foldable containers are washed under high pressure when returned, so the tags need to be waterproof.
- 3) On-metal tags are generally used for the cage trolleys, but these are expensive.

They overcame each issue and lowered the initial cost as much as possible by choosing waterproof tags. By using a low-cost label, these could be applied to a large number of foldable containers. For cage trolleys, they decided to attach the tags on the destination board which is made of a non-metallic material.

## Reasons for Using GRAI

Co-Op Tohoku made a forward-looking decision to use GRAI in order to uniquely identify their transport assets because they wanted to make their system compliant to open supply chain standards. Although the new system is now only used for closed and in-house distribution, Co-op Tohoku expects that the new center will be used

for joint distributions with other co-operatives and that it will handle transport equipment managed by other companies.

## Automatic Scanning When Leaving the Distribution Center

Under the current management system for the transport equipment by using the EPC/RFID, the tags are scanned when the equipment enters and leaves the distribution center.

The process of taking the equipment out of the distribution center became more efficient by using an “automatic stacking device gate for the foldable containers used for stores”.

This stacking device gate automatically scans the roll cages and the foldable containers that will be transported and links them to the information about the delivery locations. It automatically and accurately scans the order of the roll cages that will be transported one by one. A tablet placed on the side of the gate then immediately shows the number of pieces of equipment that have been scanned. When the gate cannot scan a piece of equipment, a warning light and alarm will be set off. The gate was made to be resistant to wear, and with consideration to the direction of the radio waves.

Consideration was also applied to the way in which the antenna would be set up and how the gate scans the equipment, to improve the accuracy of the scanning.

## Improving Trust between the Distribution Center and the Stores

Although there is no comparative data for the newly launched center, there have been “non-visible improvements in the distribution efficiency” and there have been no more losses of equipment as a result.

Particularly significant is the fact that the mutual mistrust between the center and the stores has been resolved by this strengthening of the management.

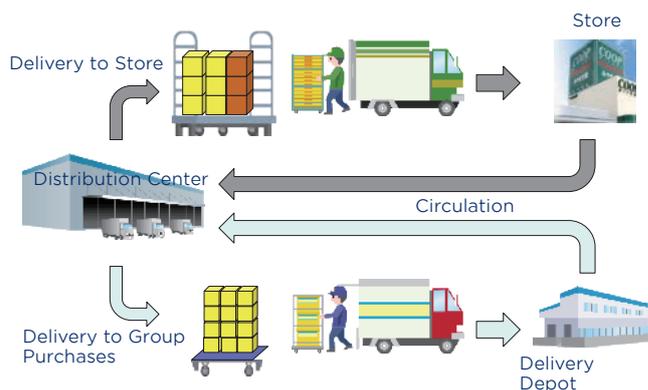
In the future, analyzing EPD/RFID data is planned. This will help to determine the appropriate quantity of the transport equipment, and resolve any delays in shipments due to transport equipment shortages during busy periods, as well as mistakes caused by the use of substitute equipment.

As stated earlier, the center began its operations in September 2015 and was in full operation by May 2016.

**Fig. 1 Co-op Tohoku's Sunnet Federation Dry Integrated Distribution Center**



**Fig. 2 Flow of the Transport Equipment**



**Fig. 3 Cage Trolley with an EPC/RFID tag on the destination board**



By using the same tag as that for foldable containers instead of on-metal tags, the costs were reduced.

**Fig. 4 Scanning foldable containers**



Returned foldable containers are scanned using a hand scanner.

## Towards Further Improvements in Efficiency

Among many cooperatives, Co-op Tohoku is one of the most proactive in pursuit of advanced measures to improve distribution efficiency. They are considering implementing other tools in their system.

One measure, which was not implemented at this time, is a “group purchase gate”. This is a device that scans 100 foldable containers at once, when they are returned from delivery to group purchases, and controls the range to be scanned by using a moving transfer tag identification software which can recognize the movement of tags. The gate recognizes only the foldable

containers that are moving in front of the gate, and can even distinguish foldable containers that are just left nearby and not to be read.

The reason why this measure is not implemented at the present time is the cost. This issue is unavoidable for the spread of RFID. However given the need to reduce the workload of the distribution center staff, and considering that labor shortages may be a concern in the future, the automation of the functions at the distribution center is both likely and desirable.

“If there is a base, it is easier to proceed to the next step.” Therefore, these challenges will continue to be pursued in the future.

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