



### CASE STUDY

EURO PLANT TRAY (EPT) – RFID Inmould  
label for smart reusable plant trays from EPT eG  
#Reuseisthewaytogo



# OVERVIEW

Reusable transport packaging are sustainable alternatives to single-use packaging, preparing logistics and trade for an environmentally friendly future.

In the field of plant wholesale, reusable solutions are becoming increasingly important, as currently over 95 percent of plant trays on the market are single-use options. The German Environmental Aid estimates that the annual waste generated by single-use plant trays in Germany alone amounts to around 150 million trays, corresponding to approximately 21 million kilograms.

## The Company

Euro Plant Tray eG (EPT) was founded in August 2022 by the wholesale organizations BGI and VGB, by the wholesalers Fleura Metz/FM Group, mvb plants worldwide, Sagaflor, as well as by the retail companies OBI and Hornbach. The common goal: to establish sustainable reusable trays on the market in order to contribute to the reduction of single-use plastic. As of January 2025, EPT has more than 30 international members.



## Initial Situation

EPT required a durable label for the identification of reusable plastic plant trays. This newly developed label solution was designed to:

- Withstand harsh conditions in both indoor and outdoor storage as well as during transport.
- Enable seamless traceability and real-time inventory control
- Provide protection against tampering.
- Remain standardizable for international supply chains.
- Be readable even when stacked.

## The inotec solution

The RFID inmould label, based on NXP® Semiconductors UCODE® ICs, is a label specifically developed to meet the requirements of EPT's smart plant tray.

- **Permanent Identification:** The label is inseparably integrated into the plant trays through injection molding.
- **Robustness:** Scratch- and smear-resistant, UV-stable, resistant to cleaning agents, and highly durable.
- **Efficient Traceability:** A combination of RFID, barcode, data matrix, and clear text.
- **Optimized Processes:** RFID enables simultaneous reading of up to 1000 trays for more efficient warehouse management.



# THE INITIAL SITUATION

With the decision to implement the Packaging and Packaging Waste Regulation (PPWR), the EU Parliament is betting on reusables: From January 2030, the use of single-use plastic for domestic transports and transports within a corporate group will no longer be permitted across Europe.

The use of individually labeled reusable trays not only reduces plastic waste but also opens up new opportunities in process automation and supply chain efficiency.

EPT sought a smart labeling solution that ensures complete traceability and thus real-time inventory control. Among other things, this should help uncover inefficiencies in the logistics process.

In addition, the cycle - or return flow - of trays within the supply chain from customers to the plant wholesale should be trackable. Another requirement: The reusable system should also be usable beyond national borders.

Due to the special conditions in plant wholesale logistics, robust solutions needed to be developed. Labels were required to be scratch-resistant, smear-resistant, UV-stable, and resistant to cleaning agents.

All these challenges prompted EPT to seek a specialized solution.





# THE INOTEC SOLUTION

For EPT, inotec has developed its own RFID label that withstands high temperatures during the production process. Through the inmould process used in the injection molding of the tray, the label becomes an integral part of the reusable tray. Precisely because of its inseparable bond with the carrier, the label is perfectly suited for sustainable circular systems in plant wholesale. The inmould labels are flush with the surface, waterproof, resistant to cleaning agents and UV, and extremely robust against mechanical impacts.

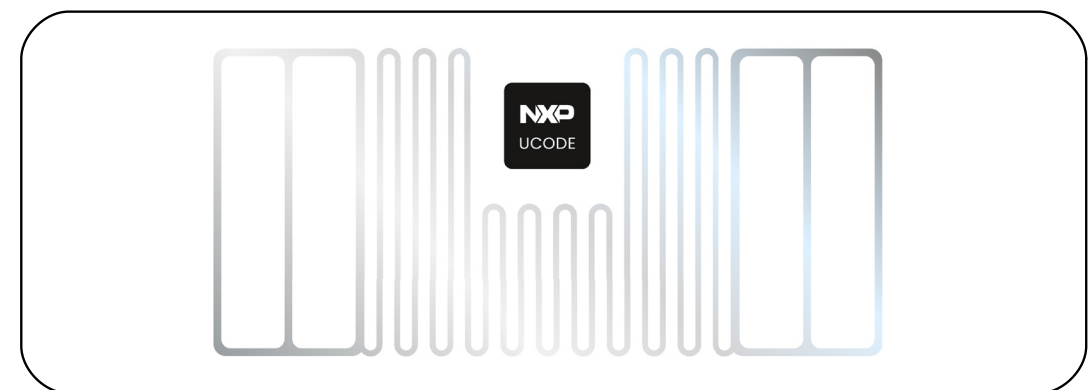
The design of the reusable plant trays posed an additional challenge: the available space for labeling is limited. Despite its small size, the label offers an excellent read range, ensuring maximum functionality with minimal space requirements.

In addition to batch capture via RFID, the labeling of the trays should also be visible at all times.

With the innovative RFID solution, the distribution of trays to EPT

customers can be recorded through RFID scanning based on serial numbers - a process even more efficient than scanning 2D data matrix codes. RFID solutions offer superior item management compared to conventional barcodes or simple quantity registration. As a packaging concept, the EPT Tray sets the new European industry standard. It successfully demonstrates how the use of single-use plastic packaging can be avoided.

„inotec’s innovative RFID labels incorporating our high-performance UCODE products enable exceptional efficiency in tracking Euro Plant Trays as they allow seamless tracking even in challenging environments. We’re happy that UCODE is contributing to the reduction of single-use plastics supporting sustainability goals and compliance with forthcoming regulations.” *James Goodland, NXP Semiconductors*





## Durable RFID Labels.

Stefan Meyer, inotec, explains:



RFID solutions for RTI identification are the core of an efficient reusable system. Thanks to the unique labeling with barcode and RFID tags, you always maintain an overview of the location, contents, and condition of your EPT trays. This not only simplifies inventory management but also optimizes replenishment and the planning of your logistics processes within the EPT reusable ecosystem.“

# LABEL QUALIFICATION

Robust, secure, and versatile: inotec's RFID inmould label is the tailor-made identification solution for EPT. By utilizing an NXP® Semiconductors from the UCODE® family with self-adjust, reliably high read ranges can be achieved even under changing environmental conditions. The resulting broadband performance also facilitates use across national borders. Thus, the RFID Inmould Label provides a reliable method for tracking and optimizing tray management.

### Advantages of the RFID inmould label:

- **Efficient Traceability:** The labeling - featuring The RFID labels which also features clear text, barcode and QR code, enables seamless traceability of trays throughout the entire supply chain.
- **Process Optimization:** Enhanced transparency and optimized tray management significantly improve planning, with the inventory of empty trays being traceable at all times.
- **Bulk Scanning:** RFID technology facilitates the simultaneous reading of large quantities, up to 1,000 trays at once.
- **Durability:** The labels come with surface protection, making them scratch- and smear-resistant, UV-stable, and resistant to mild chemicals. They can be washed at up to 30°C and withstand water pressure of up to 30 bar, ensuring that high circulation rates are easily managed.



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