

CASE STUDY: Enabling Circular Economy in Horticulture Through RFID Inmold Identification

Background & Challenge

As Europe prepares for 2030 PPWR regulations that will ban single-use transport packaging, industries are accelerating their transition toward reusable systems. In the horticultural sector, more than 95% of plant trays are still single use, contributing to an estimated 150 million discarded trays annually in Germany alone, equating to roughly 21 million kilograms of plastic waste. With projected market growth and the potential to reach 700 million single-use trays per year across Europe, the European Plant Tray (EPT) cooperative launched a standardized reusable tray designed for long-term durability and circular pooling. However, to operate efficiently at scale within international supply chains, these trays required a permanent, tamper-resistant, and highly readable identification solution capable of surviving extreme temperature conditions, outdoor exposure, cleaning cycles, and dense stacking throughout transportation, storage, and reuse cycles

Solution & Results

inotec developed a custom RFID inmold label that is permanently fused into the tray during injection molding, providing highly durable, tamper-resistant identification while enabling long-range, bulk reading of up to 1,000 trays at once. This solution delivers real-time traceability, supports automated inventory control, reduces manual labor, and ensures reliable performance throughout the tray's multi-year lifecycle, all while seamlessly integrating into international supply chain processes.



Market(s):

Horticulture

Solutions:

Developed a permanently integrated RFID inmold labeling system enabling durable, high-performance identification and automated traceability throughout the reusable tray lifecycle.

Key Outcomes:

- Withstands extreme environmental and handling conditions throughout multi-year reuse cycles
- Enables bulk reading of up to 1,000 trays at once, reducing manual scanning and labor time
- Supports automated inventory control and real-time tracking across supply chain partners
- Eliminates label loss and maintenance, lowering operational downtime and replacement costs
- Reduces single-use plastic waste and supports compliance with EU circular economy regulations