

Ramping Up with RFID



Understanding production, testing and quality requirements for RFID converting

Like most specialty work, RFID label production brings with it a unique set of demands on a converter's operations. To protect the delicate electronics within the RFID inlays and ensure the performance integrity of final tags, a converter may need to invest in areas such as in-line testing, quality control and packaging.

Many converters can continue to work with their preferred conversion equipment manufacturer to identify an efficient and scalable RFID solution. In addition, an experienced inlay manufacturer can help identify important components and functions needed to deliver RFID labels and tags for specific end uses. Here are the areas of operation converters must address to ensure an efficient RFID converting process.



Equipment

To integrate RFID capability into an existing conversion process, converters will need to add an insertion station. This may be accomplished with the addition of an insertion module or, depending upon quality control and throughput demands, may require a more extensive equipment upgrade. There is also an option to invest in standalone RFID insertion equipment.

Quality Control

Once RFID is fully integrated into the production process, converters must establish and maintain quality control checkpoints. Most production line QC testing will replicate the protocols developed during the prototype and piloting phase of production.

Once RFID is fully integrated into the production process, converters must establish and maintain quality control checkpoints.



The communication capabilities of RFID tags must be tested intermittently during and/or after packaging to ensure their integrity. Converters should partner with an experienced inlay manufacturer to anticipate and correct any production problems during the prototype and pilot production process. A knowledgeable partner can help to identify and correct any issues that could adversely impact the flexible circuitry inside the inlays.

At a minimum, experienced inlay manufacturers will recommend end-of-line readability verification; where each tag is individually read-tested at the end of the line and defective tags are removed before packaging. They may also suggest “waking up” each chip at interim steps along the line, particularly when the converting process involves encoding. Inlay manufacturers should also be able to assist converters in developing downstream quality control protocols to accompany the tag through the supply chain.

Packaging

Unlike bar codes, the readability of RFID tags is not affected by visual impediments such as dirt, paint or bright lighting. An end-of-line quality control station can help ensure chips have not been bent and remain readable after packaging.

Conversion equipment manufacturers and inlay manufacturers can provide guidance to ensure OEMs are satisfied with the final RFID tags. In addition, mutually beneficial supplier partnerships can help converters increase customers’ return on investment to grow customer relationships. By recommending RFID inlays be mounted on paper or fabric rather than plastic carriers, for example, a converter can help an OEM reduce the environmental impact of its products so that more eco-sensitive industries can take advantage of RFID. The inlay manufacturer can also ensure the inlay substrate selected will optimize the converter’s production line throughput.

Encoding

Converters may require technical support when programming/encoding customer-required information into RFID chips. For some end users, this process is more efficient when handled internally. For example, in the aviation market, luggage identifying info must be programmed at check-in; but for many retailers, it is more efficient to program identification information such as point of origin, colors, and model numbers during inlay application.

Taking the Next Step

Advances in RFID technology continue to create new economies of production and scale that reduce cost, training and labor requirements for converters. But as RFID adoption grows, the most successful converters will be those partnering with OEMs of conversion equipment and RFID inlays who can help them efficiently integrate RFID capabilities and quickly scale up production.

The first wave of RFID adoption is behind us, and a new one is underway. From wearable technology to inventory management, early adopters of RFID continue to find new uses for this intelligent communications technology in an ever-widening array of industries. Just as the applications for RFID are virtually limitless, so are the possibilities for today's converters helping to develop them. So, are you ready to take the next step?

Avery Dennison is committed to supporting converters and their customers worldwide through the RFID adoption process. We offer one of the broadest patent portfolios in this rapidly expanding commercial arena. As a pioneer in RFID technology and the largest UHF inlay manufacturer and distributor worldwide, we can help you achieve and protect each customer's information-gathering objectives, while opening new windows of opportunity for deeper, more profitable customer relationships.
rfid.averydennison.com



#MakingPossible

Avery Dennison RFID, Americas / Europe / Asia Pacific
866-903-RFID (7343)
+1-770-965-0807
rfid.info@averydennison.com
averydennison.com/rfid

© 2025 Avery Dennison Corporation. All rights reserved. The "Making Possible" tagline, Avery Dennison and all other Avery Dennison brands, product names and codes are trademarks of Avery Dennison Corporation. All other brands or product names are trademarks of their respective owners. Fortune 500® is a trademark of Time, Inc. Branding and other information on any samples depicted are fictitious. Any resemblance to actual names is purely coincidental.



MAKING POSSIBLE™