

RFID Startup Creates Intelligent Warehouse Solution for Freight Forwarders

A U.S.-based import-export broker and a European freight carrier are among the companies launching or piloting a new end-to-end RFID system designed to bring intelligence to their warehouses. A global top-10 freight forwarder is also piloting the solution. The RFID-based system, provided by Georgia technology startup [Cargocast](#), targets shipping carriers, logistics providers and import-export companies globally. The firm's solution is aimed at automating data capture related to shipping and receiving in a warehouse or throughout a supply chain.

Cargocast has recently opened an innovation center in Atlanta, where the company is testing and designing solutions specific to each customer's needs. The firm is partnering with RFID reader and antenna company [RF Controls](#) to provide an overhead reading system that can identify the movements of products through dock doors, or throughout a facility, depending on a particular user's needs.



Daniel
Diephouse

The system leverages [Avery Dennison](#) UHF RFID labels that can

be applied to goods moving through a warehouse. The company is technology-agnostic, however, and will design a solution with tags and readers that match an end user's unique requirements. While the solution has been available for the past few months, Daniel Diephouse, the company CEO, says it may be well-timed to meet the needs of logistics providers, brands and retailers that are under pressure due to the COVID-19 quarantine, which is requiring faster, high-volume shipping of goods.

The company's founders have a background in automatic-identification technologies. Diephouse was the product strategy director at software provider [MuleSoft](#), and he teamed up with Michael Morey, [Air Canada](#)'s former director of cargo, who is now Cargocast's VP of cargo solutions. After leaving Air Canada, Morey was involved with incubating ideas for bringing RFID-based intelligence to airline operations for [Franwell](#) (now [Metrc](#)). Cargocast formed in October 2019 using some of the ideas Morey helped develop at Metrc, but applying them to the larger logistics industry.

The freight industry is due for some technology-based upgrades, Morey says, not only because RFID technology is improving, but due to the growing demand for faster, nimbler shipping solutions. Now, says, with the additional pressure that COVID-19 has placed on direct shipments to customers, "Whether its COVID-19, an unexpected product demand, or problems with a supplier, supply chains need to adapt in real time. Without the real-time visibility and automation, that's impossible."

According to Diephouse, the company feels the technology has reached a tipping point with demand for automation, "while at the same time, RFID has matured to the point that cost has come down and accuracy is up." An example is RF Controls' overhead reader that can detect the location and direction of moving tags, even when they are mounted or suspended from high ceilings. For instance, says Adrian Turchet, RF Controls'

senior VP of strategy and corporate development, the company offers several antennas designed for read ranges from a 30-foot ceiling or higher. Unlike other overhead systems, he says, are “this long-range read distance and fast antenna scan speeds, which enabled wide-area scanning for any environment.” It’s designed for location accuracy down to 1 or 2 feet.

Until recently, air-freight companies have relied on manually counting goods as they are received, stored, packed or loaded onto trucks and aircraft. As the demand for high-speed deliveries has grown, the firm explains, such manual efforts and the potential for errors have created delays in the processing. So when a shipper sends a pallet of goods, warehouse workers count each carton or item on every pallet as it comes off trucks. Companies such as the European forwarder now piloting the Cargocast solution have reported that they can spend about \$1 million a year on counting labor and identifying goods as they are received or shipped.



Michael
Morey

While RFID is in use at many warehouses, most of solutions deployed require that a user select appropriate hardware for its site, in addition to software, and employ a systems integrator to integrate the technology with its existing management software. Cargocast intends to help its customers bypass such requirements; instead, the technology company builds the appropriate deployment at its Atlanta testing center and provides cloud-based software to make deployments faster and more seamless.

The system is designed to work with a user's existing warehouse-management system, Cargocast reports, so users will not need to make many changes. For instance, if workers access data on a handheld device, the software and Android-based app can provide that information in the same way. Alternatively, instructions, alerts and shipment status can be displayed on overhead screens. In a typical deployment, goods, pallets or both can be tagged to create a unique ID number that can be captured automatically. The unique ID number encoded on a tag is stored in the Cargocast software.

Cargocast is currently using Avery Dennison's AD-560 inlay, one of many in the company's portfolio, which is designed for such logistics use cases, says Jason Ivy, Avery's senior manager of logistics market development. With Avery Dennison's recent acquisition of Smartrac's RFID tag manufacturing business, he says, it extends to a wider range of tags designed for demanding logistics processes and items with increased sensitivity at low cost. The increased sensitivity, Ivy notes, "is driving high read accuracy for both fixed and mobile read infrastructures and can be applied to multiple material types, while freight is moving through industrial environments." That functionality, he adds, "combined with low cost, is what our logistics customers have been seeking in a freight visibility solution."

As each tag is interrogated, readers employ Cargocast's filtering layer, which optimizes the data and forwards it to the cloud-based server. Cargocast can install overhead or fixed readers at chokepoints, or they can provide handheld readers to capture tag IDs at key points. "We use all that data to create a more intelligent warehouse," Ivy says.



Adrian
Turchet

As forklift operators go about their work, they can access the Cargocast data to identify what needs to be loaded or unloaded, as well as where specific pallets they need can be found, provided that they are leveraging overhead readers. In the meantime, management can view how and where goods are stored, and in what ways warehouse space utilization could be improved, based on that data. They can also view the movements of goods as they are shipped and received, and thereby identify process inefficiencies.

Once the system has been taken live, Morey says, companies can then capture information about their existing operations that they may not have expected. Diephouse estimates most companies will achieve a return on their investment based on reduced manual counting times alone. The solution also provides a variety of alerts and analytics, however, to help warehouse managers make operations more efficient, optimize space utilization and alert operators before a mistake can be made. "All of this has an impact of operations," he states.

As clients start using this solution, Morey says, they begin finding operational inefficiencies they didn't know they had. For instance, he reports, "We've found that total visibility shows clients where shortcuts are being taken that can lead to errors in shipments." To prevent errors in real time, the system can identify if a skid being staged for loading onto a specific truck shouldn't be there, or if a skid is missing a piece.

Users currently testing the technology are expressing interest in expanding the system back to the suppliers. With the solution provided from manufacturer to warehouses as goods are shipped, Morey says, the handoff of products between parties in the supply chain can be automated and both parties can gain benefit. "Each participant has to receive an ROI from the solution," Diephouse states. "We can go into a facility and say 'Here's the best cost benefit.'"



Jason Ivy

For RFControls, Turchet says, "The journey with overhead RFID starts with generating the tag data. From there, it's software companies like CargoCast which stitch together the system." Before Kevin Ashton first mentioned the term "Internet of Things" in 1999, Turchet says, Mark Weiser had coined the term "ubiquitous computing" in 1988, which consists of a system with Internet, middleware, operating systems, mobile code or protocols, sensors, microprocessors, UI, networks and real-time location. The CargoCast solution with the overhead readers illustrates that system, he explains.

Due to the global COVID-19 quarantine, the company predicts that some shippers will discover their operations are not as agile and flexible under pressure as they need to be. That may require a solution that improves visibility and enables managers to view operational efficiencies and inefficiencies. At a dock door, the data can confirm that a particular shipment has left the building. If the shipment is headed for an airplane, for instance, the software can connect the dots indicating when it departed the warehouse, destined for a

specific plane, and a company can then share that data with other parties throughout the supply chain.