FEATURES

Feature

Cool Chain Logistics

Perishables shipping is relying more on technology and standardization, raising service expectations for shippers and carriers

By Aaron Karp

It has long been one of the more challenging sectors of air cargo. How do you deliver fresh fruit or fish from Chile to a supermarket in Ohio?

Thanks to advancing packaging technology and increased standardization of operating practices, shipping perishables is becoming a more predictable and less risky business.

But the shippers and carriers that move temperature-controlled freight know the margin for error is still small.

"I can't have a high percentage of late deliveries because even a small delay means the product is lost, meaning it has thawed and is not acceptable to the customer," says Ron Eike, director of operations for Omaha Steaks. The Nebraska company ships three million small frozen parcels annually and "lives and dies" with its carriers' on-time performance, he says.

Trucking Perishables

Air is easily the preferred option for bringing perishables into the United States, where consumer demand means there is enough of a market to support the high-cost business.

The speed that air transport provides for moving fish, fruit, flowers and other perishables from around the world and into the country is, to say the least, unmatched and often necessary to keep products fresh.

But as with the rest of the domestic air cargo market, trucking is increasingly becoming the preferred option to move the goods once they have arrived in the U.S. or if they are American products moving from one point in the U.S. to another.

"We are using less and less air freight and that's been an industry trend, mostly because of cost," says Raul Villavicencio, the Miami-based general manager Hellman Perishable Logistics. "To fly anything anywhere has become more expensive and truckers have

Timing is key, of course, but so is the packaging of perishables. Both the packaging material and coolant, usually dry ice, need to be precise and keep goods at the right temperature for the right length of time.

"We don't have specialized (temperature controls) within our network. Most of it is on a per package basis," says Chad Thompson, corporate packaging manager for UPS and head of the express delivery giant's Package Lab. "The packages themselves are built to protect the integrity of their contents."

That's easier said than done because each kind of perishable "has a little bit different thermal need," says Thompson. "What type of insulated container should I be using? What kind of refrigerant do I need?"

It's the kind of research that has made it possible to ship highly perishable seafoods and meats across the United States and to package up washed and mixed salads and have them sit in

become more efficient."

Shipping fresh berries from Miami to New York by air generally costs 25 cents per pound, he says. But shipping via refrigerated truck on the same route costs just10 to 12 cents per pound.

"Trucking from Miami to New York takes about 20 hours and is door-to-door," says Villavicencio. "With air, you've got three hours flying plus wait time at the airport, maybe longer with all the regulations. And then the product has to be moved from the plane to a truck, maybe a warehouse and then to the end destination. By the time you get there it's actually 10 hours. So outside of transcontinental shipments, the industry is really moving towards more trucking."

Refrigerated trucks are used on an as-need basis, usually in the summer or in warmer regions. But it is the packaging that is most important for road transport, experts say.

"Packaging is where it all starts," says Ron Eike, director of operations for Omaha Steaks. "The vehicle is not nearly as critical. A full truckload may require a refrigerated truck, particularly in the summer. But the

individual shipment has to hold its own during transport."

grocery stores for days, defying the wilting effects of age inside deceptively complicated bags. The raised expectations among consumers has pressed air cargo operators to bring that kind of specialized research and new techniques to perishables transport on a far more industrial level, from new containers to strategies that combine the potential of airlift with the possibilities of science.

In transit sites being redesigned with new handling strategies in mind and inside the containers with uncanny ability to regulate and record precise conditions, it's an industry that also is defying the truism that air freight is plain and simple derived demand and that the demand itself cannot be manufactured by the air cargo operators.

The desire to do just that - create more demand for a special kind of air cargo service - led to the development in 2002 of the Cool Chain Association, a collection of airlines, truckers, handlers and equipment makers that discuss perishables issues and develop standardized guidelines for moving temperature-sensitive cargo.

The organization last year issued "Cool Chain Quality Indicator" standards, which it says provide a means for gauging the reliability, quality and proficiency of companies involved in the transport, handling and storage of perishables. These CCQIs could form the basis for certifying entire perishable cargo supply chains.

"This industry standard for cool chain logistics allows for the first time ever a quantitative assessment of technical installations, methods and staff proficiency," says Hermann Klein, executive board member for Germanischer Lloyd Group, a leading European auditing firm that worked closely with the Cool Chain Association to develop the standards. "The CCQI point value provides the basis for companies to not only compare their cool chain logistics performance with that of competitors but also to work towards a continuous improvement of their own day-to-day operations."

Standards are rising in the perishables sector because of improving technology.

For starters, packaging and coolant materials are becoming more efficient, allowing for lighter shipments or putting more product in a package without increasing its weight. And high-tech supply chains enable goods to be delivered faster and with more precision.

Perishables technology "has advanced dramatically in the past 15 years," says Raul Villavicencio, the Miami-based general manager of Hellman Perishables Logistics, an arm of the German forwarder Hellman Worldwide. "Today we have no problem bringing a product to our warehouse and delivering it within 24 hours without losing a degree (in temperature) from when the product was first picked up."

Even a slightly lighter package can cut shipping costs by quite a degree.

"We use technology to perform testing on our dry ice and on our coolers to

ensure our packaging is the best," says Omaha Steaks' Eike. "We pay freight charges based on the weight of the whole package: the coolant, the product and the container. "So if I can reduce the amount of dry ice in a package by a pound, I can reduce my costs by a pound. We constantly work at driving down the weight of our packages. We can do that through packaging material or by improving the coolant."

In 1985, Omaha Steaks' average package weighed 30 to 40 pounds and took seven days to deliver. Today, the average package is 10 pounds and arrives within three days. The sharp reduction in weight is due mostly to using less dry ice, both because transit times have been more than cut in half and the dry ice itself weighs less than it once did.

"There have been some improvements in the last five years with the ice itself," says Eike. "It has to do with compressing the gas in the dry ice so that it doesn't weigh as much but has the same effectiveness." Coolant gel packs are also replacing dry ice in many cases, says Thompson.

"Whatever is needed to maintain the product inside the package," he says. "It really all boils down to the fundamentals of developing and designing the package so that it keeps the required thermal integrity."

And automated logistics processes allow ordering and shipping to take place more quickly and seamlessly, and with a great deal of transparency. "When (a customer) types in the delivery address, our system takes it and bounces it to the UPS computers and gives you a scheduled delivery date and time and lets you track the package from door-to-door," says Eike.

What the technology improvements at the parcel level hasn't done is eliminate the high risks that make perishable shipping, well, highly perishable.

In fact, perishable shipping remains a high volume if low yield business and many forwarders don't want a part of it. But the Cool Chain Association says there is a growing demand "for a large selection of fresh products" from around the world.

"The conveyance of temperature-sensitive goods is gaining further in significance," said the organization when it announced the CCQI standards.

"This is putting increased demands on the efficiency and reliability of cool chains: every cool chain, from the place of production or harvesting through intermediate storage and transportation to the refrigerator of the end consumer, is only as effective as its weakest link. Any interruption leads to a deterioration in quality or even to complete spoilage of the product, which is associated with financial shortfalls and the corresponding loss of image."

Such logistics demands may create more specialized forwarding operations such as Hellman Perishable Logistics.

"We're a logistics company that's totally dedicated to the perishables business," says Villavicencio. "We pick up (large shipments from major retailers and distributors) at the airport on refrigerated trucks, break it down and ship out orders on customers' behalf nationwide. You could say we're in a niche kind of business because there's not many people out there doing what we're doing, managing (perishable) products through the entire cool chain from the point of origination to destination.

"I'm sure the big guys, UPS, FedEx, Kuehne & Nagel, Danzas, are thinking about doing something like this. Fourteen percent of cargo worldwide is perishables and that's going to keep rising."

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