MODERNIZING AIR CARGO

With shorter delivery times and online shopping demands on the rise, air cargo is tasked with finding ways to keep up.

by **PAT BROWN**, Business Development Manager, and **CHRIS HOTOP**, Aviation Projects Director

Now, more than ever before, consumers are opting to shop online versus walking into a physical retail store. With companies like Amazon dominating the online retail space with promises of quick delivery, a heavy load is put on the air cargo industry.

As air cargo continues to grow and evolve, the industry is beginning to see modernization trends to help accommodate this growth and plan for the future.

E-COMMERCE

The flood of e-commerce is manifesting itself in huge volumes of shipments and increased smaller unit sizes. These must be security checked, entered into the system, handled, sorted, aggregated, tracked and shipped. The volume increase is taxing for existing infrastructure.

To better address the influx of shipments, air cargo is ramping up with more sophisticated equipment — from automated material handling systems to new software for the tracking and delivery of goods.

AIR CARGO'S VITAL ROLE DURING DISRUPTION

Air cargo has become a welcome additional revenue source for airlines by using aircraft belly capacity that otherwise would go unused. Now, the same vacant space is a vital part of sorting through the COVID-19 pandemic's effects.

In the past, shipments that had no strategic or delivery time urgency may have been moved around the world by ship, and then by rail and trucks. But the pandemic has created new urgencies for many of those basic items. The air cargo industry has answered the call with dedicated freighter aircraft now in full utilization. But that isn't enough. With so many passenger flight cancellations, airlines are transforming passenger aircraft into virtual freighters, flying with no passengers but a full belly cargo load.

Wide-body aircraft require all baggage to be containerized, so conversion to lower deck cargo containers and pallets is easily accomplished. Some airlines are even strapping cargo into passenger seats and overhead bins, or removing seats altogether, giving more capacity even to narrow-body

aircraft. The "virtual freighter" is becoming part of the supply lifeline, and it is replacing some of the lost revenue from fewer passengers flying.

BLOCKCHAIN SECURITY

Blockchain technology is developing into safe and secure chain of custody documentation for air cargo shipments. With this new assurance of data accuracy and prevention of alteration of that data, critical parts and goods can be shipped and received with particular confidence.

For authenticity purposes, aircraft parts and other critical goods must be documented from the manufacturer through final use and installation. With blockchain, assurance is provided without delaying processing or shipment.

LANDSIDE CONGESTION

According to Boeing, it is projected that world air cargo traffic will double over the next 20 years. Many of the world's largest and busiest airports are in urban settings with very limited opportunities for land expansion. In an urban area, how does freight get to and from the airport? It comes and goes in trucks, and truck traffic creates major bottlenecks at many airports.

According to FreightWaves, truck wait times for a dock in 2019 averaged 79 minutes at John F. Kennedy International Airport (JFK), 77 minutes at Los Angeles International Airport (LAX), 57 minutes at Miami International Airport (MIA) and 47 minutes at Hartsfield-Jackson Atlanta International Airport (ATL). Oftentimes, trucks are forced to park on streets and in unsanctioned areas such as private parking lots and freeway offramps, creating congestion and unsafe roadways. For air cargo, truckers have the added pressure of meeting flight closeout times for belly cargo.

There are some systems in place to help alleviate this congestion. Off-airport truck staging yards are working to solve the congestion. For example, the Port Authority of New York and New Jersey offers an airport truck convenience center for this purpose. Additionally, smart parking management systems like CargoSprint and Atlanta's TruckPass enhance remote truck lots with technology to take appointments online, check in, and log individual truck arrivals, routing them to available docks based on entered truck type, waybill number and other pertinent information.

While the approval process needed for airport property development and public road projects last for years, the development of a basic smart truck parking lot is comparatively easy and inexpensive. Some even offer investment opportunities to the business community to earn revenue from airport tie-ins, air cargo companies and lot concessions, while preserving the free access to truck lines as an incentive to stay off the public streets.

LOW-TECH APPROACHES DELIVER EFFICIENCY, FLEXIBILITY

While technology is offering promising advances for the cargo industry, some less-technical approaches can make a difference, too. Among them:

K-9 SCREENING OF CARGO

While better technology is a key driver in modernizing cargo facilities and helping them to be more efficient, the TSA approval of trained K-9 inspections for cargo has also helped to move shipments through the system at a much faster rate. Many pallets and containers can now be inspected in minutes, rather than going through labor- and time-intensive breakdown, sampling and repacking.

BUILDING TYPES AND LAYOUTS

Incorporating modularity and flexibility into the building design can allow for both single- and multi-tenant facilities as needs and demands change into the future. Considering aspects such as column spacing, clear heights, dock and roadway layouts, and floor slopes early in the design can allow the greatest flexibility of the spaces to future-proof your facilities.

MULTILEVEL CARGO WAREHOUSES

Scarce and expensive airport real estate and the need for more cargo handling capacity have combined to demand new cargo facility design thinking. With a limited and restricted land area, "going up" is becoming the only option for many expansions.

An air cargo facility in Hong Kong is a prime example of a multilevel cargo facility, which until now had been viewed as a one-off design driven by the ultra-small land footprint available there. The demand for new cargo has led designers to develop multistory warehouses.

A new multistory cargo center near JFK features two stories of truck docks and four floors of warehouse space. The facility includes handling systems and freight elevators to move outbound cargo into the facility and down to street level; inbound cargo is moved to the four floors of warehouse space and to both truck dock levels. As multilevel facilities are evaluated, consideration has to be given to the added costs for vertical construction versus the return on investment through rental rates or throughput fees in order to build an economically viable and sustainable facility.

Pat Brown: linkedin.com/in/patbrownbmcd
Chris Hotop: linkedin.com/in/chrishotop

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