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Regional Report: North America

Traffic surges stretch capacity to the limits

Cargolux Interview: Richard Forson

Record results and a fleeting challenge

Special Report: Cargo Drones

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Editor's NOTES

Will Waters

will@evaint.com



Freighters have their time in the sun

While airlines, handlers, airports and others with significant exposure to passenger airline markets continue to suffer from the collapse in passenger demand, this year looks set to be another bumper year for cargo airlines. Many freighter operators have gone through a fairly difficult and volatile decade since the global financial crisis, as highlighted in the Special Report on Freighters within this issue (page 28). So, few will begrudge them their time in the sun.

As the interview with Cargolux CEO Richard Forson highlights in this issue (page 10), even last year began with cargo airlines bracing themselves for a possible slump. And despite a barnstorming 2020 financially, Cargolux is aware that the supply-demand balance could quickly change, as it has in the past.

Nevertheless, rates look set to stay high for much of this year, as export demand from Asia remains strong and capacity still constrained. But as the freighter report highlights, the longer-term picture for all-cargo aircraft is more complex – with environmental constraints one of several factors. New orders for production freighters have been strong so far this year, but mainly for smaller-gauge aircraft. Passenger to freighter conversions have stepped up a gear, but most operators are remaining cautious and seeking to avoid overordering.

With 747 production ending next year, the focus in

the large widebody sector switching is largely to the 777, including the first 777-300ERSF, where delivery is now expected in 2023.

Meanwhile, strong inbound volumes on freighters have continued to put pressure on certain airports and cargo handlers and their facilities, especially in the US, as highlighted in the North America report (page 4). Cargo-focused airports have benefited from an influx of freighter services, and cooperation between cargo handlers has continued to help smooth out some of the volatility caused by the increase in freighter volumes.

On the technology side, the much-anticipated ONE Record project is making further progress, including a third trial by Cathay Pacific – which hopes to roll out ONE Record capability across its network in the second half of this year (page 38). And landside technology projects continue to make good progress.

The magazine's Special Report on Cargo Drones highlights good progress also made by smaller cargo UAVs, although larger cargo drone projects are still struggling to get off the ground.

For the foreseeable future, cargo drones look set to be a final-mile solution, so air freight and cargo airlines need not worry about a threat from that side – for now. And probably not for a long time yet.

James Sheridan
Chairman
james@evaint.com

Charlotte Willis
Office Manager
charlotte@evaint.com

Shobhana Patel
Head of Finance
finance@evaint.com

Parveen Raja
Publisher
parveen@evaint.com

Gemma Keen
Events Coordinator
gemma@evaint.com

Salam Raja
Producer
salam@evaint.com

Mo Banks
Sales Manager
mo@evaint.com

Alpha Diallo
Graphic Designer
alpha@evaint.com

Edward Robertson
Editorial Director
ed@evaint.com

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charlotte@evaint.com

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Tel: +44 (0) 20 8253 4000
Fax: +44 (0) 20 8603 7369

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High volumes and traffic spikes stretch capacity to the limits

Strong demand for freighter services has brought new opportunities for cargo airlines and cargo-specialist airports, although a variety of Covid-related changes has led to operational challenges for carriers, airports and their cargo handlers, reports Ian Putzger

Continuing major restrictions on passenger air services and cargo bellyhold capacity combined with surging demand has led to further exceptionally strong demand for freighter services in North America, as in other regions, bringing opportunities for cargo airlines and some cargo-specialist airports. But a variety of Covid-related changes – including the mix of aircraft and the cargo they are carrying – have brought certain operational challenges for carriers, airports and their cargo handlers.

Rickenbacker has been adding freighter links at a rapid clip. In mid-May Turkish Airlines started flights with A330-200 freighters from Sri Lanka via Istanbul to the Columbus, Ohio all-cargo airport. The service kicked off less than a month after a B747 freighter of Silkway West Airlines made its first appearance at the airport.

Bryan Schreiber, Rickenbacker's manager for air cargo business development, reports that the airport had seen a record number of planes hauling in lots of freight. Besides

all-cargo carriers – the airport's staple clientele – Rickenbacker has also seen a large number of passenger freighters, by April handling its 500th such flight.

Airports that concentrate on cargo, such as Rickenbacker or Rockford, have fared well over the past couple of years. A recent study published by the Chaddick Institute for Metropolitan Development at DePaul University found that the major 14 US airports in that category had average growth of 31.4%

in domestic US tonnages in 2020, with seven of the largest ten growing 18% or more.

Forwarder lift

A lot of the recent flight additions have been driven by forwarders that have signed up for dedicated lift, notes Schreiber. The latest entrant at Rickenbacker is flying on behalf of Trinity Logistics. Likewise, Rockford has garnered transatlantic freighter flights contracted by Senator Logistics and DB Schenker.

In some cases, this changes the game. Schreiber recalled a recent 747 flight that brought in auto parts. Some 12 boxes from that flight were put on a business jet to ferry their contents of urgently needed parts to a production facility. The operation was co-ordinated on the ramp with the forwarder. "The airline didn't have to do anything," he says.

In part, the rapid growth of cargo-focused airports is due to the volumes that are overwhelming the major gateways. Schreiber said that a chunk of Rickenbacker's traffic is overflow from large gateways.

"Customers come to us – forwarders and shippers. They tell us: 'We can't use these airports,'" he reports.

Chicago O'Hare, the busiest of the US hubs, registered 14.8% higher throughput last year, with freighter flights going up 25%. In conjunction with outdated terminals and the absence of a truck management system to cope with landside congestion, the ensuing challenges prompted some operators to shift to Rockford.

"Volumes are now at a historic peak, to a point where warehouse and ramp capacity are the limiting factors at airports," remarks Peter Kohl, COO for cargo USA at Swissport.

"At the bigger gateways like Chicago or Atlanta, demand has reached such levels that existing infrastructure – not only at Swissport, but all the other players – is really at the limit and players are operating beyond capacity of the warehouses," he explains.

Less volatility

The volatility that characterised the early months of the pandemic has abated, which has made planning easier, but resources are more frequently stretched by the larger number of freighters that compensate for the dearth of belly capacity. For the handlers, this means



“*Volumes are now at a historic peak, to a point where warehouse and ramp capacity are the limiting factors at airports*”

Peter Kohl

larger volumes to be handled over shorter periods of time.

At Miami International Airport, freighter operations were up 23% in March, ahead of a 19% increase in overall cargo operations. "Belly cargo was transferred over to freighters," notes Emir Pineda, manager of aviation trade and logistics at the Miami-Dade Aviation Department.

Passenger freighter challenges

Passenger freighters have been another challenge, given the constraints of having to load and unload the cabin space through passenger doors. Rickenbacker has developed a home-grown solution whereby portable roller

conveyors are brought into the cabin and tilted to facilitate the movement of boxes. This has speeded up the process and reduced manpower needs, Rickenbacker's Schreiber notes.

"We now have two of these sets. We can do two aircraft simultaneously," he adds.

Although it lost international passenger flights, Edmonton International Airport saw 8% growth in cargo throughput last year, thanks to a 16% rise in freighter landings by operators from Asia, the Middle East and South America. The surge in freighter traffic has fuelled a need for additional warehousing for express and fast-moving packages, says Alex Lowe, the airport's manager of global network development.

Capacity challenges

Swissport has boosted capacity in some US stations through the installation of caster decks. "In the absence of available on-airport warehouse space, that's the next-best thing," says Kohl.

In Miami Pineda has some ideas about capacity increases, but in the near term he faces budget constraints. "A lot of capital programmes have been pushed back. The airport is still not doing as well as before," he says. "Probably next year, we'll look at additional infrastructure development for cargo."

One development he is looking forward to is a plan for a new perishables fumigation centre that will serve both the airport and the port of Miami. The facility may or may not be built on airport land; but in any case, it will result in lower fumigation costs, he says.

In May Swissport was nearing completion of a 65,000 sq ft (6,000 sqm) warehouse off airport in Chicago. The idea is to truck imports there for handling to alleviate the pressure at O'Hare.

Unprecedented collaboration

But one element that has made a massive difference in coping with these challenges has been an unprecedented degree of collaboration between various players.

"Congestion at the hubs has been tough on us and tough on the handling companies," said Jan Krems, president cargo of United Airlines. "We found ways we can help each other."

In some cases, this involved switching staff, as



A lot of recent flight additions have been driven by forwarders that have signed up for dedicated lift

some stations had little cargo, he says.

In some situations when Swissport could not take on more freight, the company has worked with ramp handlers to move cargo to off-airport locations. “This type of collaboration was not seen before,” says Swissport’s Kohl.

Landside, there have been various initiatives with trucking firms. At some airports, Swissport has started trucking yards to manage traffic flows better. It has also been collaborating with truckers to channel incoming cargo to alternative locations.

In some markets trucking companies, ramp and ground handlers and the airport authorities came together to make things possible that otherwise would not happen, Kohl reports.

Changing mix of cargo

In addition to space constraints to handle record volumes, operators are also facing challenges from shifts in the mix of cargo they deal with. Jessica Tyler, president of cargo and vice-president operations innovation and delivery for American Airlines, noted that

hard freight, the traditional bread and butter business for airlines, is being replaced by loose shipments that are not pre-built. This forces players to do things differently, she says.

United’s Krems comments: “Added value is the name of the game. First quality, then added value. If your customer base is 50% speciality products and you can offer the quality and service, with the other 50% general cargo you have the right balance.”

Pharma and e-commerce targeted

Not surprisingly, pharmaceuticals and e-commerce are often the chief categories targeted. Miami handled over 15,000 tonnes of pharma cargo for the third consecutive year in 2020. Covid-19 vaccines should give another boost to this segment once the US starts exporting these, reckons Pineda.

Miami-based Amerijet expects to carry some of this traffic. The carrier has CEIV accreditation, which is used primarily on the routes to Brussels and to San Juan, but it also came into play in recent work for the United Nations, such as flying vaccines from India, says CEO Tim Strauss.

He expects to move some vaccine traffic to the Caribbean. “In some cases, we’re the only airline that flies there,” he notes.

“*E-commerce is very different from traditional handling. You get tremendous peaks, which are very labour-intensive*”

Peter Kohl

Rickenbacker is getting ready to start work on a dedicated pharma facility with 10,000 sq ft of space. It will build out an existing warehouse and install temperature control equipment.

“We’re looking for an operator now,” says Rickenbacker’s Schreiber. “We’d like them to be GDP certified from the beginning. In

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the RFQ, we'll require that the operator will become CEIV certified."

Brazilian e-commerce example

Under a special scheme with the Brazilian authorities, Miami is a designated gateway for a programme that allows Brazilians to buy online from overseas merchants. This traffic is funneled through Miami and pre-cleared, so it can be treated as domestic shipments upon arrival in Brazil. The pandemic has slowed this to a trickle, but Pineda is confident it will recover. Several other countries in Latin America have expressed interest in similar undertakings, he says.

Swissport handles e-commerce in four US locations and has registered robust growth. This is welcome, but it does bring new challenges.

"E-commerce is very different from traditional handling," says Kohl. "It's a lot

more labour-intensive and space-intensive. You have a condensed operation. Nothing is in the warehouse before and after the flights. You get tremendous peaks, which are very labour-intensive."

Swissport is looking to use more automation to handle this business, although this requires a holistic approach. "This is not for one station to do something. We have to look at it as a company," Kohl reflects.

Labour shortage

The need for automation across the industry is reinforced by the shortage of labour, which has become a serious headache for management.

Kohl notes: "Manpower is the biggest challenge right now – probably for everybody in the industry. It's incredibly difficult to hire staff now, and there is incredible inflationary

pressure on wages. At some airports, we've had three, four wage increases of the past 12-15 months, and there is no end in sight."

The pandemic has exacerbated the situation, especially at smaller companies like Amerijet, where COVID-19 outbreaks have had a disproportionate impact.

“
Manpower is the biggest challenge right now – probably for everybody in the industry. It's incredibly difficult to hire staff now, and there is incredible inflationary pressure on wages
”

Peter Kohl

"If one person gets it, it could affect eight to ten people, who will have to quarantine," says Strauss. "If you lose a crew of six, it sets you back. In some cases, the airline had to close smaller stations for a day or two."

Protecting staff

In response to the pandemic, the Columbus Airport Authority, which runs Rickenbacker and the other airports of the city, took out certification under the Global Biorisk Advisory Council programme. "This helps protect our workers and our passengers and cargo partners at a very high standard during these pandemic times," says Schreiber.

Digitalisation boost

One secondary effect of the pandemic has been its widespread boost for digitalisation, including within air cargo. American is pushing hard on this front, having installed the final element of its new iCargo platform last August. According to Tyler, this has brought massive improvements. For instance, the platform could be used to model operations of cargo flights with widebodies and the ramifications of different mixes of freight and pricing strategies. The underlying theme of American's push

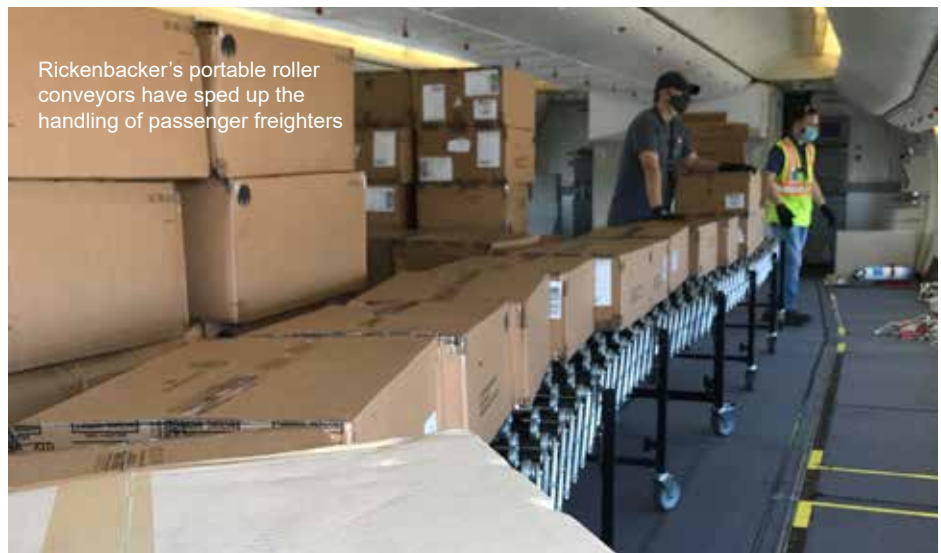
of digitisation and the use of artificial intelligence is to leverage data differently and better than before, Tyler says. “It is not just about innovation; its also cost management,” she stresses.

For all the headway that the industry has made with digitisation over the past year, most operators feel this has not gone far enough.

“There’s still a gigantic stock of paper on every plane that comes in – in triplicate,” remarks Schreiber.

Krems concurs: “This is still a paper industry, but a lot of things changed over the last six or seven years.” He points to the digitisation of scanning procedures or moving elements like claims or bookings online. However, what has been implemented to date still does not go far enough, he concluded.

Kohl remarks that companies have been moving at different speeds, employing different tools and platforms. “We need to be able to interface



Rickenbacker’s portable roller conveyors have sped up the handling of passenger freighters

the systems and get data flowing between them in a seamless way,” he comments.

The Miami-Dade Aviation Department has been promoting the establishment of a cargo community platform, similar to recent initiatives

at Atlanta and Dallas/Fort Worth. “I hope this will be the year to launch it,” says Pineda.

A CCS is also on the horizon at Edmonton. “We’re committed to bringing in a CCS in the coming years,” says Lowe. ■

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Fleeting opportunity

Amid the chaos of last year, Cargolux achieved an extraordinarily strong set of results in its 50th anniversary year, and that success is continuing. But CEO Richard Forson is aware it's not always going to be this way and that cargo airlines face some significant mid-term challenges, reports Will Waters

Amid the carnage of the Covid-19 pandemic, Europe's largest cargo airline Cargolux last year pulled out all the stops to try to meet the unprecedented needs of its customers. And although the airline's 50th anniversary year was one where there was little otherwise to celebrate, in addition to serving the sector admirably Cargolux achieved an extraordinary set of results in 2020 that few cargo airlines could have dared to dream of – earning a runaway record net profit after tax of US\$768 million, up from just \$20 million in 2019.

That kind of outcome would have seemed utterly preposterous at the start of the year, when the outlook for the air cargo sector and cargo airlines was originally quite bleak, with production halted in China due to the

outbreak of the pandemic. But the collapse in air freight capacity due to the grounding of most long-haul passenger operations and the unprecedented demand for the transport of PPE supplies and other products kicked off an extraordinarily busy year for the Luxembourg-based all-cargo carrier.

Its fleet of 30 freighters – 16 Boeing 747-400Fs and 14 Boeing 747-8Fs – carried more than 1.1 million tonnes of urgently needed cargo last year, a rise of 9.7%, and by the end of the year Cargolux had earned total revenues of \$3.171 billion and ranked fourth among IATA's top scheduled cargo carriers.

Cargolux proudly says it honoured all the blocked space agreements with its

customers that were concluded in 2019 when market conditions were significantly less favourable. Nevertheless, the huge increases in air freight prices last year due to the loss of passenger belly capacity and the demand surges meant that it was still able to deliver the extraordinary record results.

The airline's CEO Richard Forson modestly jokes: "I think if there are any cargo airlines that did not make a good level of profit in 2020, there would have been something seriously wrong with them."

Nevertheless, Cargolux's financial performance last year was exceptionally strong. And despite the challenges of the pandemic, things are looking pretty good for Cargolux again this year.



“The first half is definitely going to be very good”

Richard Forson

Good first half

“The first half is definitely going to be very good,” Forson notes. “For the second half, I think a lot will depend on how the various vaccination programmes get completed in order for travel to open up again, and also whether vaccination passports are going to be accepted universally around the globe.”

Although the airline and its profits are flying high, Forson is keeping his feet firmly on the ground – particularly when it comes to planning the airline’s capacity needs within this volatile and uncertain environment.

“I’m quite happy with the amount of capacity that we have; it’s always good to be shorter on capacity than long on capacity,” he notes. In a sector that’s been hurt by overcapacity in the past, he notes: “I’m looking at when demand is going to drop, and the implications for Cargolux then.

“At this point in time, I don’t have any trouble filling up my aircraft. What keeps me awake at night is when the situation reverses and belly space comes back into the market in significant quantity – or if there is an economic slowdown of significant proportions. Then I think the level of overcapacity in the market is going to be much greater than it was before – because people have been converting passenger aircraft to freighters, ordering freighters, building up fleets, and new start-ups coming online.

“*It’s always good to be shorter on capacity than long on capacity*”

Richard Forson

“So ultimately, if a decline comes, it could be extremely tough times for the industry. It’s nice to be in this current position, but I would be naive to think that it’s always going to be this way. There is going to come a time where it will reverse, because that’s the natural course of things.”

While 50-year-old Cargolux has learnt plenty of lessons about air freight’s cyclical past, he is aware that others may not have.

“I see still a lot of entrants coming into the market or people wanting to buy capacity, converting passenger aircraft to freighters,

expecting this to continue until 2024,” he observes. “That’s all very well, but when you make an investment into aircraft, you’re not investing for two or three years – unless you’re fortunate enough to get it at a reasonable price on a very short-term lease.

“If you’re buying new, you make an investment for 20 to 25 years. And even if you lease, you are normally leasing beyond two to three years. That said, if the rates are high enough, people can maybe wet lease; but it’s not going to be cheap.”

Forwarder behaviour changing

He notes that the behaviour of forwarders is changing as well, highlighting: “In order to hedge themselves against any increase in prices during these times, a lot of them have entered into their own wet-lease agreements of a shorter duration, and there are parties out there that are prepared to give them that. We do year-round charters for certain of our clients, but there’s a limit to what we can offer on that basis.”

That limit is the airline’s total capacity, and the way it manages that. “We need to be able to allocate it out amongst our various customers, so we are not overexposed in any one area,” Forson explains.

He is very aware that the level of undercapacity in the market currently is only because of the pandemic – and that passenger airlines “have become innovative and used their passenger aircraft as freighters, because the rates are so attractive”.

Although some say those freighters will only fly profitably while prices are at a certain level, Forson notes: “If they own an aircraft already, then all they need to really cover are their variable costs – crew, maintenance, and fuel.”

He is also conscious that some passenger airlines “have now come to realise that they’re sitting on a very valuable asset in the belly” – and that might change the way they approach the cargo market and change the competitive landscape.

“And with the growth in e-commerce, you’ve got the big integrators in the process of adding significant 747 capacity,” he notes. “UPS has bought the last 28 B747-8Fs, so they’ll be the biggest user. But in addition to that, many of the belly operators are converting to more-efficient aircraft; it’s likely that the ability to carry cargo is enhanced versus the older generation of aircraft that they’re getting rid of.” That all adds up to a complex picture when it



“Typically, airlines order when the markets are booming. And by the time they deliver, the market is in decline”

Richard Forson

comes to the capacity-demand environment – and planning the next stage of a cargo airline’s fleet development.

“Typically, what we find is when the markets are booming, that’s when airlines order,” Forson highlights. “And by the time they deliver, the market is in decline. So that’s what we need to be careful of.”

Environmental considerations

And there are also increasing environmental issues. “With the ending of the manufacturing of the 747-8F, the only aircraft left is the B777 classic freighter – but that is not new technology,” Forson highlights. “If I consider the environmental considerations and the ambition of the industry to try and cut its emissions by up to 50% by 2035, are we going to be able to do that? That’s also an important consideration when I look at re-fleeting, and it’s not going to be easy to re-fleet.”

He believes a lot of airlines that received state aid during this period “have continued to a certain extent with their re-fleeting programme – an opportunity to get new technology aircraft in and to ground inefficient aircraft, including four-engined aircraft.”

Limited options

With no more 747 newbuilds available, re-fleeting options are currently limited for large widebody freighter airlines.

“Obviously, this is the end of the four-engine aircraft era, so it will be a change for Cargolux,” Forson notes. “Any other new freighter will not have the nose-loading capability. But the biggest issue today is that besides the Boeing 777 classic, which is old technology, you don’t have a freighter from Airbus or Boeing that can be offered to customers.”

“ Obviously, this is the end of the four-engine aircraft era, so it will be a change for Cargolux ”

Richard Forson



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He adds: “It will also mean we would have to go to twin-engine ourselves. That brings its own set of operational complexity.”

Cargolux has not yet come to a decision on the next stage of its re-fleeting. “We would wait to see what is on offer from either manufacturer – Boeing with their 777FX and Airbus on the A350 side – what it means for the airline, what it’s going to cost, and also what kind of business case one could put together in this environment,” he notes. “What are the emissions reductions? Trying to cut emissions is going to add costs that airlines will have to carry.”

Level playing field

Environmental considerations are especially key for an airline in the EU, with Forson noting: “Obviously, we don’t want to see the playing fields being further distorted by European airlines becoming subject to a set of rules which other airlines don’t have to adhere to in their home markets.”

CO₂ reduction is quite a complex topic already within the EU. “It is something on our radar, with various projects underway to see how we can reduce our carbon footprint, but at the same time not have a significant negative economic impact on our

sustainability,” Forson says.

“Everyone talks about sustainable aviation fuel, but it’s four to five times the cost of normal jet kerosene. So, who’s going to pick up that cost? It cannot be the airline on its own because we will be out of business very, very quickly.”

For a Europe-based 747 operator, all these factors coming together might seem like an existential threat. But Forson is unfazed.

“That’s the challenge as we go forward: how do we continue to be a relevant player in the marketplace? We operate a 747 fleet; we still have the -8s, which are the youngest aircraft in the fleet, so they will be with us for many, many years to come.”

The -8s will be with us for many, many years to come

Richard Forson

He continues: “The biggest question is what aircraft is going to replace the 747-400s and the ERFs? Is it going to be a product that Boeing or Airbus puts onto the table or do I start looking at converting 777-300ERs – which might not be the best, but it’s a compromise.”

But on the whole, Forson is confident in the future. “I think air cargo, or moving things by air, is always going to be part of the logistics chain,” he says. “So, I don’t think there’s a threat to our existence. It’s going to be more about optimising what we have and how we organise ourselves for the future.

“More importantly, are we going to get to a position where the aircraft manufacturers say: ‘I don’t think it’s going to be worthwhile to make an investment into a freighter?’”

I think moving things by air is always going to be part of the logistics chain

Richard Forson

That would then push the sector back to where it began: using converted passenger freighters.

“I can’t answer the question today because I don’t know,” Forson acknowledges. “Airbus and Boeing are both working on products and I wait to see what they are prepared to offer. And obviously one would then do the comparisons and pick the one that makes the most sense for Cargolux’s future.”

Airbus and Boeing are both working on products and I wait to see what they offer

Richard Forson

He says Cargolux has no plans to add aircraft in the short term, having added three ERFs in 2019, and another in 2020. “They were fairly young aircraft, so they will continue to soldier on for quite a while,” he notes.

“There are certain countries where we don’t operate because of the various pandemic restrictions and health exposures of our crew”

Richard Forson

That fourth aircraft had been planned already rather than being a response to the pandemic opportunity.

“At that stage, getting any kind of additional capacity would have been priced out of being economically viable – also in terms of the ability to operate any additional capacity efficiently with the crew numbers we have,” Forson explains.

“We are quite happy to operate with our 30 aircraft. And even going into this year, others have been adding to their fleet... We have decided to remain where we are. We continue to offer an attractive network to customers.”

Operational challenges

Besides, on an operational basis, it has been challenging operating to certain countries, Forson stresses. “In China, and in Hong Kong, we don’t do any crew layovers at this point in time,” he explains. “And there are certain other countries where we don’t operate to because of the pandemic restrictions and health exposures of our crew. So, we’ve also adapted our network to focus capacity into those areas where capacity is required most

and we can service the destination reliably.”

For example, “there are certain countries in South America where we took out our rotations. And the requirements for additional crew to operate non-stop without crew layovers in China and Hong Kong also impacts our ability to continue with other routes.”

Africa hurdles

Cargolux also stopped serving Africa at one stage. Although it has reinstated Johannesburg and Nairobi, where it is able to manage crew layovers safely, “west Africa has still not been put back onto our network”, with one of the issues being the safety of crews from a sanitary perspective, Forson highlights.

But the most challenging operational restriction currently “is not having the ability to do crew layovers in China and Hong Kong, which are really the powerhouse that’s driving everything at this point”.

Nevertheless, Cargolux is still able to operate to and from China and Hong Kong at a frequency level that it wants to. “I think we’re actually

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“We only operate through freight forwarders; we are an airline for the freight forwarders”

Richard Forson

offering a lot more capacity to and from all our destinations in Asia than we had before. So, that was a refocusing of the network from our side as well,” Forson explains.

He says a lot of passenger operations to and from west Africa, especially from the Middle East carriers, have continued or been reinstated. “So, there is already some form of supply going into that market. But at this stage, from a Cargolux perspective, it’s not scheduled to come back into our network. I have to focus on those areas where I see the demand to be the greatest. I can’t serve a whole network with the resources I have within the airline currently and I’m not going to go and just acquire more resources – because I’m looking into the future when times may not be as buoyant as present,” Forson explains.

“So, it’s a balancing act.”

E-commerce opportunity

While there has been much excited discussion about the explosion of e-commerce and the opportunity or threat this may bring to air freight, the self-appointed “forwarder’s airline” mostly sees e-commerce like any another

commodity that it carries.

“We just do the flying,” notes Forson. “The distribution has to be done by third parties.” The key factor for Forson “is where the goods that are going to be distributed are manufactured. At this stage, the bulk of it seems to be in Asia.

“So, we fly the goods in bulk from Asia into Europe, and into the US, for example, and from there they go to the e-commerce fulfilment centres, or the various retailers that sell through the e-commerce platforms – and from there through a different network to the final customer, mostly either the express operators or the postal service. Our business model is based on B2B rather than B2C.”

Although Cargolux does “constantly monitor what’s taking place in the e-commerce industry”, including the expansion of some of the main players into the logistics and air freight sphere, any e-commerce business Cargolux carries is managed via its freight forwarder customers rather than directly with those shippers.

“We only operate through freight forwarders;

we are an airline for the freight forwarders,” Forson stresses. “You need a forwarder on both sides to handle those shipments.”

For Forson, those relationships have not fundamentally changed during the pandemic – even if some forwarders have talked about a reluctance among airlines to offer much long-term capacity and pushing customers towards the spot market.

“On our traditional markets where we have offered block space agreements, we’ve increased the amount of capacity that we are offering to clients,” he says. “Obviously, any client is not going to get what they wish for because I have to consider all of my customers at the same time and treat them fairly as well.

“So, I’m not keeping back block capacity, but I have a finite amount of capacity which I need to allocate. And I need to play fair with all the parties that have supported the airline through the bad times and the good times.

“Those parties that were fortunate enough to negotiate good rates in 2019 for 2020, they benefitted; we did not say ‘sorry, these



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are no longer applicable, we are changing now to a complete ad hoc system and you take it or leave it'. We honoured those commitments, at the rates that we agreed; we did not increase those rates at all."

He continues: "Obviously, coming into 2021, the rate profile is going to be different. But we have provided an increase in capacity for most of our major clients. We're not able to satisfy their complete demand. I try to be fair to all my major customers."

“
Obviously, coming into 2021, the rate profile is going to be different
”

Richard Forson

Air freight's prospects

On the question of whether the pandemic has changed air freight's long-term prospects, some people talk about this crisis having increased people's appreciation of air freight, and this being a good thing for the sector. But others say it has also highlighted the fragility of the system, meaning logistics managers are going to be cautious about relying on extended global supply chains based around air freight supply.

Forson responds: "For me, a lot is going to depend where the places of manufacturing are going to be set up in the future. At this stage, it's focused in Asia. So, to get the products to the markets, you either use sea or air."

Long-term outlook

He continues: "I believe that there's always going to be a place for air freight in the marketplace. For a long time now, it's been driven by exports out of Asia. Is that going to change? That's a big question. And if it does change, what does it mean for the consumer?"

“I need to play fair with all the parties that have supported the airline through the bad times and the good times”

Richard Forson

Is it going to result in higher prices because it's being produced closer to home? Are they going to be prepared to pay the higher prices? The sole reason it went out to Asia was because of the cost of production.

"And even from China, it was outsourced to places like Vietnam and Thailand, Cambodia, Indonesia, Malaysia – all of those countries benefited from it."

On the environmental issues, he notes: "Everybody decries the CO2 emissions of aviation. Aviation today is a very small percentage of total CO2 emissions, but because we are a high-profile industry, we are in the spotlight."

He adds: "I think the industry does acknowledge that they have a contribution in reducing CO2 on a global basis. But as I've told my Corporate Social Responsibility people, I want to do something that is sustainable and that is real. I want to spend my money where I get a constant return in

CO2 reduction."

More broadly, he notes: "And even as we go forward, over the next 10 years, I think it is an extremely brave person that predicts what this industry is going to look like."

Forson says he often gets asked what Cargolux's capacity is going to look like in the future, and that is also difficult to precisely predict.

He concludes: "I will always want to be a relevant player in the marketplace. At this stage, I think we are number six worldwide or maybe slightly higher in the first quarter of 2021, number four at the latest measurement. But to me, that's not the most important thing. I want to be a relevant player – in the sense that, when a forwarder needs capacity, we are on the first list that he's going to call.

"If it means 30 aircraft or more than 30 aircraft, that's a business decision we then have to take as Cargolux." ■

"I think it is an extremely brave person that predicts what this industry is going to look like"

Richard Forson

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Heavy freight UAVs still some way from takeoff

Lightweight cargo drone projects targeting the healthcare and e-commerce sectors have gained further momentum in the past 18 months, with large cargo drones facing bigger challenges getting off the ground, reports Ian Putzger

Despite the depressing effects of the Covid-19 pandemic, the development of drones – or Unmanned Aerial Vehicles (UAVs) – for cargo purposes has continued to gain momentum during the past year; and there has also been progress on the regulatory front, with important steps forward in both the US and the European Union at the end of 2020.

Not surprisingly, established operators of smaller drones that target sectors like the

distribution of healthcare goods and vaccines have made the fastest progress – followed by the e-commerce sector, where the large players have continued to lead the charge – and some vaccine drone delivery projects have accelerated since the arrival of Covid-19.

The advance of remotely piloted aircraft that can haul larger payloads has been less robust, and some players have deviated from their original plans. But the official inauguration in

April of a cargo drone airline by Dronamics – albeit without a functioning full-scale aircraft yet – and growing traction in the logistics industry, indicate progress towards the establishment of some commercial operations.

Trail-blazing Zipline

At the small end of the cargo drone market, Zipline has blazed a trail in the distribution of medicines and vaccines, starting with the establishment of a drone delivery system to

move urgent life-saving medical products in Rwanda in late 2016. Using a fixed-wing design launched using a catapult-type system, the company covers the entire country from two distribution centres, each harbouring 20-30 drones and managing over 150 flights a day.

Zipline is now on its seventh-generation drone, which cruises at around 70 mph (112 kph) carrying a payload of up to 3.3 lbs (1.5 kg), with the cargo dropped to the delivery point via a parachute system.

In 2019, it also entered Ghana, where it is on course to double its footprint to eight distribution centres by the end of the year. This set-up made it a natural choice for the distribution of Covid-19 vaccines in the west African country. Starting these deliveries in March, Zipline says it plans to distribute some 2.5 million doses across Ghana in the first 12 months of the project on behalf of the Covax initiative.

Since 2019, the company has made more than 50,000 deliveries in Ghana, including more

By mid-May, Zipline drones were making a delivery every four minutes across Africa



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than 1 million vaccines, and claims its services can reach 12 million people – just over a third of the country’s total population. Zipline’s drones can deliver to hospitals, but also to temporary mobile clinics that will be used to distribute the Covid-19 vaccine in the country’s more remote areas.

Nigerian launch

After also entering the US market in 2020, delivering medical supplies and PPE in North Carolina last May, earlier this year Nigeria’s Kaduna state signed an agreement with the company for drone delivery of Covid-19 vaccines. Conor French, general counsel at Zipline, expects to enter into agreements with several African countries this year. By mid-May the company was making a delivery every four minutes across Africa.

Zipline has also made moves into the commercial arena outside the medical field. In March it signed its “first strategic operational partnership” with Toyota Tsusho, the trading arm of the Toyota Group. This will see Toyota Tsusho manage its own distribution centre powered by Zipline aircraft and logistics technology, French said.

Last September Zipline also announced an agreement with Walmart, under which it will make on-demand deliveries of select health and wellness products, with potential to expand to general merchandise. The drones will operate from a Walmart store and can service a 50-mile (80-km) radius, with trial deliveries initially take place near Walmart’s headquarters in Northwest Arkansas. According to French, flights are expected to commence later this year.

Canada drone growth

Meanwhile, after several years of operation with its Sparrow drone, which can carry payloads of 4.5 kg up to 30 kilometres, Drone Delivery Canada (DDC) is in the final testing stages of its larger Robin (11.3 kg payloads up to 60 km) and Condor (180 kg up to 200 km) models. CEO Michael Zahra expects this to be completed “within the next few months”.

The company is working on a model that will be ten times larger, but for the near term these three types will make up its fleet, he says. Pre-selling of and Robin is well under way, with interest from a number of prospects and customers, according to Zahra.



Drone Delivery Canada’s Condor will be able to carry payloads of 180 kg up to 200 km



An operations centre for DDC, which believes 13% of e-commerce will be delivered by drone by 2025, rising to 40% by 2030

Initial customers for the Sparrow include DSV Air & Sea Canada, to deliver various types of small shipments, including healthcare related products, from a DroneSpot at DSV’s warehouse in Milton, Ontario to a DropSpot approximately 4km away for Reckitt Benckiser, the global producer of health, hygiene and home products.

DDC is also in the process of setting up a drone hub at Edmonton International Airport, which will be a hub-and-spoke operation to offsite locations.

“We can easily envision a hybrid network with all three models,” Zahra says, adding that DDC is also in talks with other airports.

With its range and payload capability, the is well suited to serve the energy sector and

mining operations in remote locations. This could result in transfers of urgent parts from plane to drone at an airport like Edmonton. In general, Zahra sees integration possibilities with airlines through their e-commerce activities, pointing to projections that 13% of e-commerce will be delivered by drone by 2025, rising to 40% by 2030.

Air Canada Cargo (ACC) would be an obvious candidate there. The airline launched a dedicated e-commerce arm earlier this year and has been a commercial channel for DDC for the past two years after the pair signed an agreement for ACC to market and sell DDC’s capacity across Canada.

Outside Canada, the drone company is pursuing licensing agreements for its technology, which includes the drones as

well as its proprietary Flyte software system. It has letters of intent with clients in Africa and India, Zahra says.

Black Swan event

Over in Europe, Bulgaria-based Dronamics on 1 April announced the official launch of a ‘cargo drone airline’ geared to manage same-day deliveries of cargo with its flagship Black Swan drone – an autonomous fixed-wing aircraft designed to carry loads up to 350 kg over distances up to 2,500 km. The company claims that it can operate at a cost that is 50% lower than other airlines.

Dronamics Airlines expects to start operations in Europe but plans to have subsidiaries in Ireland, Canada and Australia. But the launch of the airline does not mean Dronamics is ready to commence operations. Following extensive trials of smaller-scale models, the company is still in the final stage of production and assembly of its full-scale Black Swan and will be starting test flights as soon as the aircraft is ready. Certification is



DDC expects the final testing stages of its larger Robin and Condor models to be completed within the next few months

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still about a year away, estimates COO Sergio Oliveira e Silva, and the company is currently engaged in drafting manuals and writing procedures to that end.

Commercial flight operations expected next year

But preparations for its first commercial flights, expected next year, are already in high gear. At the end of April, the company announced three new 'droneport' locations. The three German airports – Paderborn-Lippstadt, Rostock-Laage and Airport Weeze – bring the number of agreed droneports to 38 airports in 12 European countries. Other European droneport agreements have been signed with airports including Liège Airport, which serves as Alibaba's European air hub, and Brescia Airport, the national hub for the Italian postal system.

These droneports, where drones are launched to cruising altitude and landed at the end of the remote-controlled flight, are so far mostly at second- and third-tier airports – often around an hour from a major airport. But other locations are also viable, as long as they have a 400-metre runway, Oliveira e Silva says.

The location of the flight control centre has not yet been determined, but initially this will be managed out of Bulgaria. Management intends to hire commercial pilots to operate its drones. According to Oliveira e Silva, the training and approval process takes about 3-4 weeks. The drones will operate on pre-set routes. "We won't do ad hoc," he says.

Targeting e-commerce, pharma and spare parts shipments

Offering a same-day service, Dronamics is targeting primarily e-commerce, pharmaceuticals and spare parts shipments, says CEO and founder Svilen Rangelov. He also sees a good use case in interlining with commercial airlines, where Dronamics can act as a feeder operator. For distances in excess of 400 km, his company can offer a service that is more economical than road transport, he says, as well as faster.

Oliveira e Silva says the company can turn out at least 100 aircraft in a year, but it plans to find regional manufacturing partners as it expands. "It makes no sense to build a drone in Sofia and then fly it to Australia," he explains.



UPS aims to get the eVTOL, capable of carrying cargo payloads of up to 600kg, to fly autonomously

UPS invests in 600kg-payload electric-powered aircraft

Although the major global integrators have all been exploring the potential to introduce small package-delivery drones, in April UPS revealed plans to buy ten much larger electric-powered vertical take-off and landing aircraft (eVTOL) from Beta Technologies, with deliveries due to start in 2024. Capable of carrying cargo payloads of up to 600kg, to augment the integrator's air service for select small and mid-size markets, these units will initially be piloted, although UPS has ambitions to get the aircraft to also fly autonomously.

The first ten Beta aircraft are scheduled to begin arriving in 2024, with an option for UPS to purchase up to 150. The aircraft can charge in an hour or less, and produce zero operational emissions, UPS highlighted. With a 250-mile (400km) range and cruising speed of up to 170 miles per hour (270km/h), UPS said it "will be able to plan a series of short routes, or one long route, on a single charge to meet customers' needs".

It said the aircraft was "ideally suited to more quickly and sustainably transport time-sensitive deliveries that would otherwise fly on small fixed-wing aircraft", stating that its use of the aircraft "will benefit healthcare providers, thousands of small and medium-sized businesses, and other companies in smaller communities".

UPS' Flight Forward subsidiary received the first US Federal Aviation Administration (FAA) Part 135 Standard air carrier certification to operate a drone airline, and is said to be already operating daily revenue-generating flights with drones. The FAA certification also enables UPS Flight Forward to fly payloads of up to 7,500 lbs (3.75 tonnes) – either with an

operator or autonomously.

These latest developments have added fuel to the excitement about eVTOLs, but a lot of scepticism remains. Heavy batteries and limited range are two prominent concerns. One analyst has described the investment mood over the sector as "frothy" and compared it to the short-lived boom for personal jets in the early 2000s.

But UPS is more upbeat. The integrator envisages the vehicles moving packages from its hubs to facilities in remote areas and later carrying packages in bulk from airports to downtown areas to avoid the gridlock on city streets.

UPS chief information and engineering officer, Juan Perez, commented: "These new aircraft will create operational efficiencies in our business, open possibilities for new services, and serve as a foundation for future solutions to reduce the emissions profile of our air and ground operation."

The express operator said the aviation industry was "focusing on small aircraft, which UPS uses to serve many small and medium-sized communities, to develop groundbreaking, sustainable electric-powered aircraft".

Beta founder and CEO Kyle Clark said the use of advanced technology to create a reliable aircraft with zero operational emissions "will revolutionize how cargo moves", adding: "By utilising vertical takeoffs and landings, we can turn relatively small spaces at existing UPS facilities into a micro air feeder network without the noise or operating emissions of traditional aircraft."

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Çelebi is the first company in Hungary to acquire the pharmaceutical supply quality assurance system that guarantees medical shipments are strictly controlled and all necessary actions are taken quickly and safely in the ground handling step of the supply chain. A self-certified independent cooling system is implemented in Budapest that controls temperature changes and directly sends reports/alerts to managers via e-mail or SMS. Temperature maps are also prepared and followed by responsible employees through the use of calibrated heat sensors which measure how the temperature is distributed in the room as required. With these latest implementations, Çelebi could provide cooling in three categories; 15°C - 25°, 2°C - 8°C & -15°C - -25°C.



New Cold Chambers in Frankfurt

Çelebi Cargo GmbH Frankfurt always aims high to provide the best service to our valued customers. As part of the preparation for the increasing flow of Pharma shipments and to keep our aim and focus on our planned growth, we are proud to announce the opening of our brand-new cold storage facilities in Frankfurt. Even during these unpredictable times, we keep investing in further growth, especially in preparation for urgently required temperature-controlled goods in 2021. As a member of the Air Cargo Community Frankfurt, Çelebi Cargo GmbH is helping develop Frankfurt Rhein/Main into one of the leading Cargo/Pharma airports in Europe, with a significant increase of the current cold storage facilities. This is also the first step to becoming a fully CEIV certified handling agent in 2021. With our brand-new cold storage facilities, we would be pleased to provide all common temperature ranges, especially for pharmaceutical goods as per our customer's expectations and requirements.

Çelebi Cargo GmbH moves forward with digitalization We have launched the FAIR@Link slot booking system on June 1. By implementing this system we will be offering expedited processes at check-in counters and doors. Also Corona-compliant procedures will reduce the risk of infection among drivers and employees.

We would also like to mention our CEIV certification process in Frankfurt. All necessary audits are successfully completed and waiting for the final confirmation.



Extended Cold Chain operations in New Delhi

In addition to our dedicated and state-of-the-art Perishable Cargo and Pharmaceutical Logistics centres in New Delhi, Çelebi is also using the refrigerated Cool Dolly for extending its cold chain operations until airside. Cool Dolly can offload one full pallet/container upon aircraft arrival at a pre-defined temperature, adjustable to the requirements of the perishable products. This service is the first of its kind in India. At the end of last year, we expanded our Bonded Trucking Service in India by including

Hyderabad in the network. Now Çelebi Delhi Cargo is offering Bonded Trucking Services on a daily basis from HYD, IDR, CCU, AMD, LDH, KNU and NOIDA SEZ and assuring same-day connection on booked flights from New Delhi.

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New Cargo app in Turkey

As the leading pioneer ground handling company in Turkey, Çelebi Aviation has successfully implemented an innovation for cargo operations. To optimise the user experience, Çelebi Aviation launched a mobile application, called Çelebi Track & Trace that makes it easier for customers to track every step of their cargo shipments on their mobile phones and tablets.

Çelebi Cargo launched a mobile application to manage and track cargo shipments. This application will allow users to access comprehensive information on shipments and track cargo in real time, through receiving, security screening and warehousing with detailed documentation. The application is compatible with both iOS and Android devices and it can be downloaded from the Play and App stores.



New initiative in India

Çelebi Aviation's Marketing & Communications Manager, Funda Eraslan says: "We are proud to announce our new "We Care" initiative in India, which is organised to support our employees in these challenging times. This initiative is offering some health-related services such as vaccination, COVID-19 insurance, oxygen support services, family assistance, telephonic medical support and immunity booster.

"The vaccination process has been started in New Delhi and will be extended to other stations in India shortly. As Çelebi Aviation, we are proactively working to increase vaccine availability for all our employees globally in the ongoing fight with COVID-19."



Natilus is working on three models, with potential cargo payloads of 100 tonnes, 60-tonnes, and 3.8-tonnes

Rangelov says Dronamics is looking for regional partners that can produce at least 1,000 drones per year.

Sabrewing prepares for vertical take-off

Back in North America, Sabrewing has been developing aircraft with vertical take-off and landing (VTOL) capability.

The California-based company has worked on several models, but most of the recent focus has been on the Rhaegal model, an electric VTOL (eVTOL) aircraft with a cargo capacity of 2,450 kg and a range of 1,850 km. Compatible with airline cargo operations, the drone is designed to carry two LD-1 containers, four LD-2 containers or two LD-3 boxes. Sabrewing has also developed a larger version with twice the lift capacity.

The Rhaegal was unveiled in May 2020 at a US Air Force event. Apart from the basic features of the unit, the military is highly interested in the drone's AI-based 'detect and avoid' technology to avert collisions and open the door to autonomous operations. The company is now pursuing a dual strategy of working on military applications that involve autonomous operation – it has obtained some funding from the US military – and commercial use with remote piloting.

Sabrewing is currently reported to be flight

testing its first full-scale Rhaegal and may get clearance to operate this year, although even the drone's smaller-scale prototype has the capability to fly more than 1,800 km carrying over 1,000 kilogrammes of cargo.

On the commercial side, Sabrewing last September signed an exclusive five-year representation agreement with Arabian Development & Marketing Co that covers Saudi Arabia as well as the Gulf Cooperation Countries and the pan-African region. This includes an order for 102 of the company's larger Rhaegal-B model, as well as the establishment of assembly and MRO facilities throughout Saudi Arabia and Africa.

Big ambitions

Elsewhere in tech-oriented California, arguably the most ambitious drone project in the heavy cargo arena comes from Natilus, which is working on a drone with a cargo payload of 100 tonnes to ply transpacific trade routes. This is one of three models the company is working on, alongside a 60-tonne aircraft to compete with the B767 freighter and a 3.8-tonne model aimed at feeder operations for express traffic.

The larger two models have gone through the conceptual design stage, but for now Natilus is concentrating on the smallest drone, which

should be ready for flights in about two years, according to CEO Aleksey Matyushev. He reckons that the 60-tonne model will follow about four years later.

Originally the company had envisaged an amphibian operation, where the drones would be loaded at a port, towed out to sea for launch and land near the destination port, but this concept has been abandoned. Instead, the drones are now designed to serve airports, just like the commercial aircraft they are competing or interlining with, and will use the same ULDs and ground handling equipment, Matyushev says.

Unlike most other drone players, Natilus has no ambition to operate its drones itself. "We are exploring some ACMI possibilities, but the business model is more like Boeing and Airbus. We design, build and sell aircraft," Matyushev says.

Evolving eVTOLs

Back in Europe, German drone start-up Wingcopter has been making airborne waves since its launch in 2019. Like the Sabrewing Rhaegal, its design combines an eVTOL capability with a tilt-rotor mechanism and fixed-wing aircraft body, although Wingcopter's developments so far have focused on payloads of up to 6kg – with the plan to deliver small

shipments of medical and health supplies, e-commerce goods, and food.

Its initial model, the Wingcopter 178 Heavy Lift, provides both one- and two-way delivery, covering distances of up to 120 kilometres and payloads of up to 6kg, which can be accurately lowered and raised via a winch mechanism, or land at the point of destination and return to its origin with a new payload. And Wingcopter in April also unveiled a new variation – the Wingcopter 198, “the world’s first triple-drop delivery drone”.

Since initially attracting a seven-digit Euro financing package and launching flights in 2019, Wingcopter raised a further \$22 million in funding this year. And in mid-April, All Nippon Airways’ parent ANA Holdings unveiled Wingcopter as its partner in a drone delivery plan to serve rural Japan and remote areas. Set to start next year with a commercial service to carry medical goods and daily necessities to remote Japanese islands, the choice of Wingcopter was not a huge surprise as the

pair it had already collaborated in the past two years on some trials.

Certain other cargo drone operations that appeared to be making rapid progress in the last few years have gone quiet more recently, with some indications that the projects have switched from commercial to military uses or run into technical or regulatory difficulties.

For example, Indonesian airline Garuda in 2019 announced plans to purchase 100 cargo drones within five years – to deliver freight with payloads of up to 2.2 tonnes from 30 logistics centres to the archipelago’s 18,000 islands – using UAVs from China’s Beihang UAS Technology. But it is unclear whether this project has yet got off the ground.

And plans by Astral Aerial Solutions to set up a drone operation in East Africa appear to have slowed since it conducted some successful test flights in 2019 using the Flyox cargo drone, designed by Spain’s Singular Aircraft to carry a cargo payload of almost 2

tonnes over a range of up to 1,200 km. But Astral has recently announced partnerships with Wingcopter and Yamaha covering the operation of smaller drones.

Meaningful progress

In the last five years there has been tremendous progress in trials and even real-world operations of cargo UAVs carrying small shipments – especially of medical products in remote areas – and some of these developments have accelerated further since the start of the pandemic. Although many of the heavy cargo drone projects have gone more slowly than originally expected, there is a continuing momentum to move beyond lightweight drones and trials of small prototypes towards meaningful commercial cargo drone operations. But it seems unlikely that cargo airlines, nor the stakeholders that support them, need to worry any time soon about drones taking over their market. For the near term, drones seem more a potential solution for the final mile. ■



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Freighter markets adapt to a new era

The current soaring demand for all-cargo aircraft comes as the first 777-300ERSF aircraft prepare to make their debut, 747 production ends, and e-commerce fulfilment demand exerts an ever-greater influence, reports Will Waters

The Covid-19 pandemic has clearly changed the air freight market enormously since last year, with the well-known collapse in bellyhold capacity massively driving up demand for freighter aircraft and the prices paid for cargo capacity.

But the potential long-term effects on freighter markets is a more complex picture requiring an understanding of the dynamics going back several years.

Starting with more-recent trends, Tom Crabtree, Boeing's regional director for air cargo airline market analysis, highlights in particular the loss last year of 777, 787, A330 and A350 widebody passenger capacity,

supply chain disruption from the various lockdowns, "coupled with accelerated demand for e-commerce", leading to the current high demand for freighter aircraft.

Josh Collingwood, fellow regional director for air cargo airline market analysis at Boeing, says the near term "has really been defined by the supply side", with belly capacity providing around half of global capacity prior to the pandemic. "But throughout 2020, freighters were taking on the lion's share – around 70% – and really working overtime. We saw a lot of aircraft come out of early retirement or pulled out of storage, and things like regular maintenance pushed off. And the overall utilisation has been up significantly."

IATA estimates air freight showed a 9% decline in 2020, although Boeing estimates traffic was down about 7.2% in 2020 versus 2019, "which was already down about 3%" compared with 2018.

"So, overall, 2020 was a poor year – and that's coupled with the previous trade tensions between 2018 into the shutdown of 2020," Collingwood notes. "But then, PPE needed to get moved and e-commerce started accelerating; and then industrial production and other trade picked up.

"But it really only benefited cargo carriers that had dedicated freighters, with all-cargo carriers seeing year-on-year (YoY) gains and



express carriers doing well – and helping mitigate some of the downturn on the combination carriers.”

Near-term future

Collingwood continues: “As we look to the future, most don’t really expect the international market to get back to 2019 levels until somewhere between 2023 and 2024. That’s not saying that cargo capacity won’t be the same until then; I think as more passenger aircraft get operating, they’ll be able to start carrying more cargo, even if passenger loads aren’t quite the same level.

“But I think, nonetheless, it’s going to lead to these volatile yields this year and into the next. And I think we’ll start to see that stabilise and then eventually go back into some of the more fundamental growth.”

Lasting legacy for freighters

Collingwood believes there is going to be “definitely a lasting legacy – the spotlight

remaining on freighters and the flexibility and utilisation that they allow and provide”.

But whether that translates into higher orders for freighters in the longer term is less clear. In terms of orders since the start of the pandemic, Crabtree notes: “We have seen a heightened demand for freighters. The best year we ever had in freighter sales was 2018 – we sold 125; and then another 65 in 2019 during a weak growth period. And we sold 91 freighters last year in 2020. And in the first quarter of this year, we’ve already got roughly half that number – 44 freighters ordered just in Q1 2021.”

Smaller-gauge freighter boom

Breaking those figures down, he says “the smaller-gauge freighter has driven a big part of our order book over the last 18 months or so”.

Boeing has sold 247 production 777Fs since the programme was launched in 2005, and its order base for 767 freighters – launched

in 1993 – stands at 320, with 232 production freighters and 88 BCF conversions.

“But what has really been big in the last year or so, and cumulatively since the launch of the programme in 2015, we’ve sold 183 737-800 Boeing Converted Freighters in the standard-body space,” highlights Crabtree.

Strong interest in Airbus freighters

Meanwhile, rival manufacturer Airbus reports “a lot of interest even before the pandemic and since the start of the pandemic” for its freighter aircraft since it formed a strategic partnership with ST Aerospace (Singapore) and EFW (Dresden) to design a new range of passenger to freighter (P2F) converted aircraft. Key recent developments include the launch in June 2015 of its A320P2F, with a prototype inducted in 2021 for conversion. And its A321P2F conversion programme last October saw the delivery and entry-into-service of the first converted aircraft – leased by aircraft asset manager Vallair to Qantas,



“The effects of the current passenger airplane lower hold capacity deficit, coupled with accelerated e-commerce demand, has clearly moved some order decisions forward”

Tom Crabtree

to operate services on behalf of Australia Post. Meanwhile, its A330-300P2F and A330-200P2F programmes have made further progress, with recent orders and deliveries for DHL, Egyptair, and lessors CDB and Altavair.

Airbus says “the P2F business is very healthy at the moment”, with “high levels of interest”. But Airbus marketing executive Crawford Hamilton notes: “As a P2F is a long-term commitment, the demand is not short-term driven by the crisis but the larger long-term requirements of a growing market – and one that will continue to grow with such things as our now-familiar on-line purchasing habits.”

Recent order patterns in context

To see the patterns in their full context requires an understanding of the history of freighter orders since the global financial crisis (GFC), Boeing points out. Crabtree explains that Boeing’s record 125 freighters sold in 2018 “to a large degree was a product of a long period of stagnation following the GFC in 2008 and 2009”. Demand “started to continuously grow again in 2014 and 2015”, before the oil price downturn meant “people held back again. And in 2016, a tentative recovery; and in 2017, we saw a 10% growth rate in cargo worldwide. And that led to our banner year of freighter sales in 2018.”

Then, just as the freighter market seemed to be recovering, there was an industrial slowdown in 2019, “paired with some of the global trade tensions that really just halted air cargo trade”, followed in 2020 by the pandemic.

Measured approach to new orders

In terms of whether there is now a clear sense that the pandemic has accelerated demand for newbuild freighter orders or conversions, Crabtree responds: “Airlines and leasing companies have upped their inquiries about freighter aircraft, but they are taking a measured approach to making acquisition decisions as they know that airplane purchases are a long-term asset play decision.

“The effects of the current passenger airplane lower hold capacity deficit, coupled with accelerated e-commerce demand, has clearly moved some order decisions forward; but on the whole, airlines and leasing companies have done their utmost to make prudent, long-term decisions. They know that passenger airplane lower hold capacity will return, and that they need to plan for that eventuality.”

Younger 777s available

There has been speculation that with the downturn in demand for passenger air services making available some younger

widebody aircraft – such as 777s – for conversion at relatively affordable prices, this may reduce the mid-term need for newbuild widebody freighter aircraft, leading Boeing to adjust its forecasts.

Crabtree responds: “Our long-term forecast for cargo traffic is a 4% average annual growth rate through 2039 for the world, and that will lead to a more than doubling of our cargo traffic levels, both on pax bellies and freighters. And that will result in a more than 60% (62%) growth in the freighter fleet, from roughly 2,000 in-service freighters at year-end 2019 to 3,260 in-service airplanes by the year 2039.

Production vs conversion freighters

“Only about 830 or so airplanes flying at year-end 2019 will be flying 20 years hence, due to age obsolescence and lesser efficiency. That will require the addition of 2,400 – both conversions and production factory-built freighters to the world fleet. And typically, the bigger the gauge of equipment the more likely you’ll see a production freighter solution.”

He explains: “The express sector is the predominant user of freighters. Out of 2,000 freighters, roughly 1,100 to 1,200 of them fly either directly or in some service to the big names in the industry like FedEx, UPS, DHL and SF, or e-commerce networks like Alibaba.

Assessing the risk of a capacity glut

Ludwig Hausmann, who leads the air cargo practice of consultancy McKinsey & Company, estimates that as of May 2021, maindeck capacity has increased by around 30% compared to pre-Covid levels, while belly capacity – which prior to the health crisis represented 55% of all air cargo capacity – is still down by slightly over 50%, leading to a capacity shortfall of around 12-13%, currently.

He estimates that belly capacity may be back at 60% of pre-crisis capacity by the end of this year and maybe 90% at the end of next year. “This means that at the end of next year, we might be in a situation where

air freight belly capacity is closing the gap, more or less, while heightened freighter capacity continues to operate,” he notes.

“But what will also be crucial is where the belly capacity is coming back” – and it is expected to come back first on continental or short to mid-haul routes and to tourist destinations, “which are largely irrelevant to air cargo”.

Capacity calculation

On the likelihood of a push to convert passenger aircraft into freighters creating serious over-capacity in maindeck space two to three years from now, Hausmann

notes: “We need to ascertain how much additional capacity the conversion work will generate in relation to the existing volume of maindeck space on the market; and on the basis of the latest analysis, it appears to be something in the region of 5-10% only over the next three years.”

McKinsey’s Tobias Wölfel highlights that a good number of the freighters flying at the moment are old aircraft at the end of their operating life and are programmed to go out of the market in the not-too-distant future. “So that’s likely to neutralise the prospect of a glut of capacity coming from the conversion work.”

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The first Airbus A321P2F conversion entered service last year – leased to Qantas to operate services for Australia Post

As a consequence, your small and medium widebody freighters are usually flying hub and spoke for express carriers where the utilisation isn't as high as the large widebodies, which fly long haul and over 10 hours a day.

“So, you have to have a lower capital-cost asset to make that revenue-cost equation work. And that's why you see conversions predominate in the single and medium widebody space – not totally, but in the standard-body space, we don't see any production freighters of big numbers going forward.”

Historical indicators

Crabtree continues: “There's a bit of an ebb and flow, but looking at 20 years of history of additions to the large widebody fleet, roughly 75% to 77% have been production freighters like the 777 freighter, the 747-8 freighter, the 747-400 freighter and the ERF freighter, and conversions make up the balance – somewhere between 20% and 25%. That has to do with the advantages of payload range capability that production freighters have, as well as their ability for utilisation at heightened levels beyond 10, 12, sometimes 14, 15 hours per day.”

But he acknowledges that some 777s becoming available for conversion a bit younger and a bit more cheaply than previously expected “will be a factor, and that will probably reinvigorate the conversion wide-body space, which is about

two years old at this time”.

Airbus' Crawford Hamilton comments: “Affordable aircraft can help boost a market and we are seeing increased demand for our P2F products – with this as one factor.”

The Big Twin

Israel Aerospace Industries (IAI) and GECAS launched the first 777-300ERSF conversion programme in October 2019. Nicknaming it ‘The Big Twin’, the first 777-300ERSF is expected to enter service in 2023, boasting “twin-engine efficiency that burns 21% less fuel per tonne than 747-400 freighters, and big-cargo capability that sees 25% more volume than the 777-200F production freighter”. IAI says “with the flexibility to be more profitable than the competition at high or low utilisation models”, the aircraft has “the range capability to seamlessly replace aging 747-400 and MD11 freighters”.

As launch customer and co-funder of the programme, GECAS has committed to fifteen firm orders – including the prototype aircraft – with Kalitta set to become the first operator of the new passenger-to-freighter type in 2023. Originally a 747 operator, Kalitta's fleet has grown to a total of four 777F, 24 B747-400F and nine B767-300BDSF aircraft.

Boeing's Crabtree notes that when IAI launched that programme in 2019, the only

existing conversion programme for large widebodies was IAI's 747-400 programme. Boeing ended its MD-11 conversion programme in 2014 and ended its 747 400 BCF conversion programme in 2016.

“So, the 777 is a new type entering the space at a time when feedstock is becoming more affordable,” notes Crabtree. “But, in our opinion, those three factors – payload, range and utilisation – will favour production freighters, going forward (in the large wide-body sector).”

747 production freighter ending

Crabtree confirms that 747 freighter production really is ending, with no possibility of that coming back. “We are sunseting the programme, finishing production next year,” he says.

“We will have delivered 107 B747-8 freighters. What we noticed over time is that the market has developed a distinct preference for twin-engine aeroplanes – predominantly on the pax side but also on the freighter side. And we are basically aligning our product development efforts and alignment with market needs.”

“
The market has developed a distinct preference for twin-engine aeroplanes – predominantly on the pax side but also on the freighter side
”

Tom Crabtree

Out of more than 1,500 B747s built, there are estimated to be 435 still in service, of which more than 300 are in freighter format. Crabtree says Boeing will continue to support operators of 747-400 and -8 aircraft. “So, they're not going anywhere anytime soon.”

Airbus also highlights how environmental issues are driving some of these changes, noting that “new ICAO CO₂ regulations will prevent old-generation aircraft from being manufactured after the end of 2027”, with

implications for Boeing's 767F, 777F and 747F production programmes – although the latter will end in 2022.

“There is then a need for new-built freighters in both the large and mid-size categories,” says Hamilton. “The A330neoF meets the ICAO regulations and can be manufactured after that date. Conversion of existing types for P2Fs can also continue.”

New production freighter types

In terms of new production freighter types, some cargo airlines such as Cargolux have said they are waiting to see what new-generation freighters the aircraft manufacturers will offer – Boeing in terms of a possible B777X-based freighter or 777FX, and Airbus for a potential A350 production freighter. Qatar Airways has offered to serve as a launch customer for a freighter version of Boeing's 777X aircraft, arguing that “by 2025, our initial freighters will be getting about 10 years old, so we will need to replace them”. QR in January took delivery of three additional new 777

freighters, bringing its total 777 freighter fleet size to 24, plus two 747 freighters.

Boeing says its “focus right now is on the flight test and certification of the 777-9” passenger version, adding: “The current 777 freighter is the world's largest and most capable twin-engine freighter, with the lowest trip cost and highest reliability of any large freighter. It is our best-selling production freighter and we have sold 80 B777 freighters in the past two years.

“We are also evaluating future freighter needs, including a freighter version of the 777X. We will continue to engage with current and potential future customers on how we can best meet their long-term freighter fleet requirements.”

Airbus options

Although Airbus has struggled in the widebody production freighter market in recent years, with disappointing sales in its A380 and A330 production freighters, there

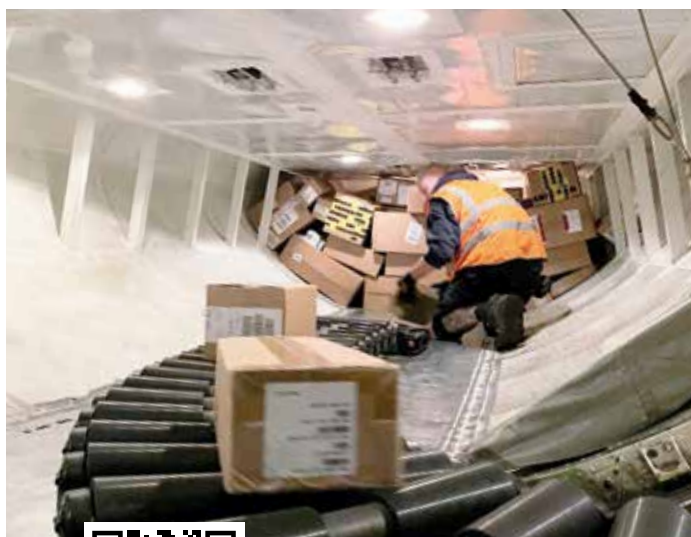
are signs it could soon make a new offer in the widebody freighter market. This could be a medium widebody based on a stretched version of the A330-900 or an A350 freighter, or both.

Airbus recently confirmed it has been “looking carefully” at the large widebody segment, where Boeing currently has a near monopoly. Airbus CEO Guillaume Faury told Bloomberg: “Our customers tell us that our platforms, and the A350 in particular, would be strong candidates for a good freighter version and they would like to see us being a player in that segment.” Faury said Airbus was looking at the life cycle and the business case, although no decision had been made.

Although an A350 production freighter could prove a good aircraft, whether it could compete successfully against a lower-priced but similar capacity converted B777-300ER/F remains to be seen – especially with 777-300 potential conversion candidates now available at discounted prices.



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Freighter shift to cargo-focused airports accelerates

Moves by air cargo carriers and forwarders towards non-passenger hub airports precedes the pandemic. But Covid-19 has sped that transition, reports Will Waters



The shift towards freighter services since last year has, unsurprisingly, pushed a larger share of global air cargo tonnages through freighter-specialist airports – such as Liege (LGG) and Leipzig (LEJ) airports in Europe and US airports such as Chicago Rockford International (RFD), Fort Worth Alliance (AFW), and Ohio's Wilmington Air Park (ILN).

Indeed, a study in March by the Chaddick Institute for Metropolitan Development at DePaul University found that the domestic US tonnages handled at the 14 largest US 'cargo-focused hub airports' – those with extensive cargo traffic but little or no passenger traffic – grew by an average of 31% in 2020. With eight of the top ten also served by Amazon Air, which

expanded rapidly in 2020, much of this growth was driven by a surge in online retail traffic.

Indeed, the figures are skewed somewhat by the massive growth last year at Wilmington Air Park, which saw domestic US tonnages expand almost fourfold (+289%) as a result of Amazon Air investing heavily there,

establishing it as its fifth largest hub, the Chaddick report highlights. Amazon operates roughly 15 flights from the airport daily, despite having a heavier concentration of flights at Cincinnati/Northern Kentucky International (CVG) less than 100 km away.

Nevertheless, RFD (+18%) and AFW (+47%) also recorded substantial growth, both serving as integrator hubs – for UPS and FedEx, respectively – in addition to an Amazon Air base.

As highlighted in the North America report in this magazine (page 4), Swissport's Peter Kohl says volumes are now at a historic peak at some major US airports, to a point where warehouse and ramp capacity have become limiting factors at bigger gateways like Chicago (ORD) or Atlanta – where cargo handlers are operating beyond the capacity of their warehouses. For example, ORD registered 14.8% higher throughput last year, with freighter flights up 25%.

Volatility easing

Although the volatility that characterised the early months of the pandemic has abated, making planning easier, resources are still more frequently stretched by the larger number of freighters compensating for the lost belly capacity – which for cargo handlers means larger volumes to be handled over shorter periods of time.

Reto Hunziker, cargo director for air charter broker Chapman Freeborn Group, says most airports and cargo handlers have been “adapting fast and well to the new situation”, noting: “There are some bottlenecks here and there, but in general it is working well.”

“
We saw a more friendly approach of the passenger-focused airports. Since the PAX business went down, they are now more open and flexible for cargo flights
 ”

Reto Hunziker

He notes one upside, highlighting: “We saw a more friendly approach of the passenger-focused airports. Since the PAX business went down, they are now more open and flexible for cargo flights.”

Ken Ryan, director of cargo at RFD, points out that “the moves by air cargo carriers and forwarders towards non-passenger hub airports precedes the pandemic”, citing Liege, Hahn, LCK and RFD as examples.

“What has happened is that Covid-19 has sped that transition as a result of major delays in retrieving cargo at overburdened passenger hubs,” he explains. “They are not really to blame and they are not alone – look at the ocean ports and general logistics chain issues.”

He anticipates this trend in air cargo continuing, highlighting that “prominent air freight forwarders are signing long-term



leases in RFD. It will be some time before all this turmoil settles. The resulting long-term trends will then be more apparent,” he notes.

“Still, those trends will be pushed aside for the next wave, eventually.”

Forwarder factors

Others have also highlighted that freight forwarders are increasingly developing their own-controlled charter networks as access to guaranteed capacity has tightened.

Hunziker notes: “We see a big demand for own-controlled capacity – not only for the big forwarders but also from the mid-sized forwarders. We see this continuing since they want to make sure they can offer a continuous and reliable product towards their customers.”

Steven Verhasselt, commercial director for Belgium’s Liege Airport, believes this trend towards freight forwarders “integrating, in order to secure capacity” will continue, “as long as demand is strong and demand outsizes supply for a considerable time during a year”. He says freight forwarders “look first to fly into airports where they already have facilities”, which “gives an advantage to the more traditional airports”. But he says up and coming freighter airports “can overcome this with an efficient system to release BUPs very quickly”, adding: “Once the BUP is in a truck, the difference between a 5km ride and a 250km ride is very relative. It could also help freighter airports to attract freight forwarders to establish their own facilities in these hubs that can accommodate those flights – be it scheduled, charter, or charter programmes.”

“
Once the BUP is in a truck, the difference between a 5km ride and a 250km ride is very relative
”

Steven Verhasselt

Limited opportunities for long-term BSAs

One reason air freight forwarders are signing



Much of the recent growth at freighter-focused airports has been driven by online retail traffic

E-commerce shaping freighter demand

New demand trends, for example from e-commerce customers or operators, are changing the calculations of some cargo airlines and their customers, in terms of the types of aircraft operated and the airports that they serve. RFD’s European agent, André Morrall, anticipates that the “direct to consumer” (DTC) revolution “will create both on-airport and off-airport logistics real estate opportunities whereby brands will want to serve customers via fulfilment solutions that will in a number of cases involve air transport, as they work towards offering same- or next-day delivery”.

He highlights Amazon, especially in Europe, where “they are using a B737 fleet, circa 20 tonnes of capacity, operating relatively short, sub-4-hour sectors to move inventory between major urban centres and their warehousing and last-mile networks”.

But he notes that “using smaller payload cargo aircraft to serve just-in-time markets is nothing new”, highlighting how the Cargomaster freighter variant of the Cessna 208 Caravan utility aircraft, with its 1.6-tonnes cargo payload, “was developed specifically for FedEx” to get express cargo to small, regional markets.

“We could see more of this type of aircraft evolving,” he notes. “The freight feeder 5000 concept aircraft was thought out to serve this market, for example. The Antonov 26 is still much in demand – as are ATR 72, typically aircraft operating in the 5 to 7 tonne payload market flying typically sub-4-hour sectors.”

Morrall concludes: “Consumers seem to be prepared to pay a premium to get their goods on a basically on-demand basis; and this consumer trend will eventually work its way back into helping shape air cargo fleets – in many ways, it already is.”

And this is also a market that could also see drones deployed, he notes – a topic discussed in pages 20-27 of this magazine.

Leading market analyst McKinsey says cross-border e-commerce is on course to account for 20% of global air cargo shipments by 2022 – a doubling of its share since 2017 – despite its growth slowing during the Covid pandemic as a result of price hikes caused by capacity constraints.

But for Liege Airport’s Steven Verhasselt, ultimately the decisive factors for the e-commerce market are the same as for freight forwarders. “It all comes down to reaching final customers in a time-efficient, cost-efficient, reliable way,” he says. Nevertheless, he says one difference is that, “as the newcomers do not have facilities yet, they look at the possibilities in a more open mindset. For the airports, and for the cargo communities on airports, it means opportunities to add hub services. In Liege, we already see the Alibaba-Cainiao effect on air, rail and road.”

But in order to grab the opportunities, Verhasselt says “all the service suppliers will need to meet requirements and focus on KPIs, more than ever”.



Freight forwarders are increasingly adding long-term capacity at airports such as RFD

up for long-term leases and developing their own-controlled capacity is that there are currently only limited opportunities to set up the normal long-term blocked space agreements (BSAs) this year with carriers, as was the case in the second half of 2020, or at least not on routes ex-Asia.

Although some carriers such as Cargolux (see interview on page 10) argue that they have provided an increase in capacity ex-Asia this year for most of their major clients, the rapid growth in demand for space ex-Asia means even those still offering long-term capacity agreements are not able to satisfy their clients' complete needs.

That said, given the current high prices and the level of uncertainty over how much more capacity will come back into the market this year, "long-term pricing – when you talk about six months or 12 months – doesn't make a lot of sense at this stage, whether it's towards the customers or from the carriers", says Mads Ravn, executive vice president for air freight procurement at freight forwarder DSV.

Cargo airport agility

Ryan says speed of processing is one of the key advantages of cargo-specialist and cargo-

only airports – and their responsiveness to changing circumstances.

And he highlights "agility" as one of the key advantages of cargo-specialist and cargo-only airports in enabling airports and cargo handlers to manage the shift towards greater use of freighters or rapid changes in freighter routings and services. "It starts with embracing change," he notes, and "requires thoughtful vision and thoughtful investment in the areas which will create the circumstances which allow for speedy decision-making and action".

But Ryan says there can be considerable risk involved, noting that RFD recently "sold \$50 million in bonds to finance two ramp-side facilities, totalling 190,000 sq ft; truck parking; a new access road; and parking for an additional six 747-8Fs". The first of the two buildings is completed and fully leased, and building 2 will be completed by December.

Demand-supply outlook

But in the shorter term, many commentators believe strong demand for freighter capacity will continue for some time.

Hunziker comments: "We think the market will remain the same for at least this year. PPE requests might go down towards the end of the

year; however, other verticals like e-commerce, pharma, high-tech, automotive and general cargo will have a stronger demand.

"We expect a strong peak season with high demand during Q3 and Q4. It has then to be seen what happens when PAX demand comes back to an increased level. The ramp-up will take a while and will be based on travel demand. Considering this, we expect that access to freighter capacity will remain challenging"

Longer-term perspective

Liege Airport's Steven Verhasselt says that during the last 18 months, there have been a lot of issues and demands that have been "all short notice and ad hoc", but there is also a need to keep one eye on longer-term perspectives and priorities. "We have seen the PPE material charters, the focus on vaccine transportation, and on to the next big thing. While it is a great achievement for the industry that we manage this, I also think we should not forget the basis and the long term. Perishables, live animals, automotive, garments will remain the bread and butter for freighter operators, and for the air cargo industry."

He concludes: "As much as I am ready to change, I also urge people to keep the focus on our existing business and our long-term partners." ■

Cathay pushes ahead with third IATA ONE Record trial

The airline's next objective is to introduce the 'Virtual Shipment Record' for all shipments across its global operations, with the carrier now hoping to support implementation with forwarders worldwide for eAWB and Interactive Cargo in the second half of 2021, reports Will Waters

Cathay Pacific Cargo has taken a significant step towards the end-to-end digitalisation of the global air freight supply chain by taking the lead in its third successful pilot of IATA's ONE Record initiative, this time at its home hub in Hong Kong.

Cathay says the success of the latest pilot marks a major milestone for the carrier, which has been a pioneer in the



CAAS talks with Clera Lam, head of Cargo Digital at Cathay Pacific, about the lessons from the latest trial

1. Can you please say more about what was achieved in this third pilot, and how it took things forward compared with the first two pilots?

For Cathay Pacific, conducting a pilot in our home base to help the Hong Kong air cargo community get ready for IATA One Record carried special meaning. This third pilot involved multiple stakeholders, including the Airport Authority, the Cathay Pacific Cargo Terminal, Cathay Pacific as the airline, and three forwarders with different size of operations.

In this pilot, direct system interfaces were set up with between these stakeholders so that the airport, airline, cargo terminal could use their own IT systems without

“manual supported” interfaces to relay information about shipments.

Also, in this trial, we used the ONE Record API PUB/SUB standard for data updates notification enabling multiple parties common access to one single data source, as well as building in different access rights for different parties following the ONE Record security protocol.

2. What lessons were learned through this experience?

During the development, we identified some room for improvement on the guideline for the mapping of the One Record Data Model with the existing CIMP schema and we have provided feedback to IATA.

We found that even IT vendors without any background on existing CIMP protocols can easily adopt the technology for the new API call and security protocols.

3. What are the next stages now in taking this project towards wider implementation?

Using the One Record platform powered by GLSHK, Cathay Pacific will be able to support One Record implementation with forwarders worldwide for eAWB and Interactive Cargo (using Cathay Pacific Cargo's Ultra Track product) in the second half of 2021.

implementation of this key initiative. Following the success of this pilot, the airline's next objective is to introduce ONE Record across its global operations, with the carrier now hoping to support One Record implementation with forwarders worldwide for eAWB and Interactive Cargo in the second half of 2021.

IATA ONE Record creates a 'Virtual Shipment Record' for all shipments – a single-record view of a shipment that will enable data to be shared by all stakeholders across the air cargo industry. IATA's ONE Record initiative enables end-to-end transparency of consignments as they pass through multiple links in the chain from shipper to agent, airline, warehouse and statutory authorities such as customs, all following IATA's protocols for APIs – the interface that enables users to connect to the system – security and data sharing.

The programme builds on paperless operations of the e-AWB (Electronic Air Waybill), where Cathay Pacific Cargo was the first airline to implement 100% e-AWB operations in its home market.

"The ultimate aim of the ONE Record programme is to enable a data-led digitisation of the global supply chain in order to improve service, speed and reliability, through the standardisation of competing or overlapping systems of the different stakeholders in the air cargo industry into one of shared intelligence and cooperation," explains IATA head of digital cargo Henk Mulder.

The third pilot, which ran in Hong Kong in March, was a joint initiative between Cathay Pacific Cargo and the Airport Authority Hong Kong (AAHK) followed shipments from three freight forwarders over a two-day period, during which time all of the stakeholders could view and monitor the shipment data. The participating freight forwarders were Sinotrans (HK) Air Transportation Development Co Ltd, Soonest Express (HK) Co Ltd and DHL, which all used a platform developed by Global Logistics System (HK) Co Ltd (GLS). GLS (HK) also developed the platform for Cathay Pacific Cargo.

Cathay says digitisation of this kind "is

central to Cathay Pacific Cargo's strategy to enable a more agile and responsive service for customers". Director for cargo Tom Owen notes: "ONE Record is a very important programme, which is going to set the future standard for air cargo."

The airline previously participated in ONE Record pilots in Amsterdam and London Heathrow. And following the success of this pilot, the airline's next objective is to introduce

ONE Record across its global operations.

GLS (HK) CEO Simon Ng comments: "We are aiming at enabling data exchange between forwarders and Cathay Pacific based on the ONE Record standard over a web-based API by the third quarter of this year. This is a first step towards our ultimate vision in migrating all of our airline and forwarder customers to the ONE Record standard."

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P.O. Box 47
NL-5730 AA Mierlo

T +31 (0)492 430 059
F +31 (0)492 432 713

info@saco.aero
www.saco.aero

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Brucargo 'Digital Green Lane' project targets further cuts to truck waiting times

WFS joins stakeholders piloting a new Road Feeder Management App to digitally improve the efficiency of the interface between trucking operators and handling providers



Worldwide Flight Services (WFS) has joined other stakeholders working with Brussels Airport and the Air Cargo Belgium community to help eliminate waiting times for international road feeder services in the latest initiative to support Brucargo's 'Digital Green Lane'.

Two years ago, WFS was one of the first cargo handlers to sign up for Brucargo's slot booking app, which allows local freight forwarding and transport providers to request a single or

recurrent time slot to deliver or collect export and import air cargo shipments. WFS now receives some 2,000 slot requests a month from companies using the centralised web application.

The latest phase of the Brucloud project – developed by Air Cargo Belgium (ACB), technology provider Nallian, Brussels Airport and the air cargo community stakeholders – is to pilot a new Road Feeder Management App to digitally improve the efficiency of the

interface between trucking operators and handling providers. Four trucking providers are participating in the pilot: H.Essers, Jan de Rijk, Ninatrans and Wallenborn.

The app allows for automatic booking of flexible slots for cargo drop-offs and collections by Road Feeder Services operators, which can shift in time according to the estimated time of arrival (ETA) sent by the truck driver. Once registered, the

app tracks the progress of the vehicle and gives the driver an updated time slot prior to arriving at the cargo terminal. As well as simplifying the communications process, the app aims to ensure drivers and trucks benefit from a better and priority service by eliminating waiting times which can occur when vehicles arrive at a cargo terminal and are processed in order with other trucks.

For WFS, the pilot offers the opportunity to gain real-time insight of predicted workflows, which allows it to optimise personnel planning to ensure fast, timely, safe and secure handling of cargo shipments carried onboard its airline customers' flights to and from Brussels.

Koen Gouweloose, MD for Belgium at WFS, comments: "Brucloud is already making a significant difference to the way the air cargo community in Brussels works together and provides a win-win scenario for all stakeholders.

"I am confident we will see very encouraging results from the pilot of the Road Feeder Management application because it addresses some of the key challenges trucking and handling companies face: timeslots and planning are not always predictable due to changing traffic conditions; we rely heavily on manual exchange of information; and language barriers can mean a lack of clear communication with truck drivers.

"This new app addresses another key milestone in the 'Digital Green Lane' process and has the potential to benefit the entire Brussels Airport community once we complete this trial stage."

The app is the latest digital solution developed by the Brussel Airport cargo community "to address challenges linked to industry fragmentation for the transport of goods from manufacturer to consumer,

and inefficiencies resulting from a lack of visibility of the end-to-end process". Supported by airlines, GSSAs, handlers, forwarders, truckers and others,

Brucloud is an open data-sharing platform with multiple collaborative apps that enable the Brussels Airport cargo community to act as an integrated network – providing "an agile and flexible digital roadmap using dashboards and analytics to achieve smart logistics solutions".

WFS opened a new 250,000 tonnes capacity cargo terminal at Brussels Airport in January which already uses new technologies and digital processes to improve the efficiency of truck handling. Truck drivers arriving at the building are welcomed at kiosk-based, self-service reception points, enabling them to stay in their vehicles, before being immediately assigned to one of the terminal's 40 cargo gates. ■

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Bart Kroonenberg
 COO
 +31 653 765 332
bart@aviaco-gse.com



Hermes and Nallian link up to offer cargo GHA landside solution

Collaboration aims to provide handlers with a data-driven approach to freight management that drives operational efficiencies, enables better planning, and facilitates coordination with freight forwarders and trucking companies

Yuval Baruch, CEO, HLT



Jean Verheyen, CEO, Nallian



Cargo Management Systems (CMS) provider Hermes Logistics Technologies (HLT) has teamed up with data sharing and connected cargo community specialist Nallian to empower cargo ground handling agents (GHAs) with an end-to-end solution to digitalise and streamline their landside management processes.

The two air cargo handling digital specialists say Nallian's landside management applications will complement Hermes New Generation (NG) Ecosystem solutions, "offering GHAs a paperless approach that provides end-to-end visibility and control across their supply chain".

Nallian offers a suite of collaborative

applications on top of its Open Data Sharing Platform that empowers both cargo communities and individual cargo actors, such as GHAs, to easily connect and share relevant data with their stakeholders, achieving unparalleled levels of efficiency and visibility in cross-company processes.

HLT says its customers will benefit from additional services via the collaboration including: a Slot Booking App that connects handlers, freight forwarders, and trucking companies to coordinate pick-ups and drop-offs, eliminating waiting times and flattening peaks and idle times; and a mobile Acceptance and Delivery App that gives truck drivers easy access to the booked slots assigned to them,

enabling the real-time registration of all actions during the pick-up or drop-off process.

Yuval Baruch, chief executive officer for HLT, comments: "We are empowering the ground handler by joining our ecosystems together to give them better control and increased efficiency through better customer experience and superior functionality. Nallian's complementary offering lent itself to a partnership with Hermes and our collaboration will ensure a best-in-breed process with the technology to work for our customers."

HLT has a range of NG Apps as part of the Hermes NG Ecosystem including, NG Business Intelligence, and Datalakes, and NG Track&Trace, designed to maximise a GHA's profit by giving access to data and supply chain visibility. The NG Ecosystem product range enables GHAs to provide superior service through data sharing and tools to manage exception handling.

Jean Verheyen, chief executive officer of Nallian, comments: "Our collaboration will help ground handlers to enjoy the benefits of digitisation in their extended processes, enabling them to do more with the same infrastructure. Our apps have been built with and for air cargo stakeholders and this collaboration perfectly fits Nallian's open approach, which aims at giving as many cargo actors as possible access to best-in-class solutions and the benefits of digitisation."

With data sharing being a key element to the collaboration, HLT says it has also been working on projects to use its 'Datalake' infrastructure, which captures and stores Hermes NG Business Intelligence events, including developing predictive business analytics with artificial intelligence algorithms. ■



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Covid vaccine delivery: Applying the lessons learned

Although some of last year's initial concerns were overstated about the capacity of the sector to meet the vaccine logistics challenge, air freight's role will continue and expand in the coming months as vaccine production ramps up further, reports Roger Hailey

An armada of 'flying freezers' with life-saving doses criss-crossing the world. That was the initial fevered forecast of air freight's logistical role when the first Covid-19 vaccines were available.

In 2020, there was much industry talk of 10,000 freighter movements dedicated to Covid-19 vaccine shipments, while the first available vaccine, made by Pfizer BioNtech, needed to be kept at minus 80°C – colder than an Antarctic winter. Other vaccines required minus 20°C. That could mean a mountain of dry ice, a problem both for safe aircraft operations and a challenge for dry

ice production and handling.

Fortunately, it gradually became clear that a much smaller number of freighters and cargo-only passenger aircraft are needed, with many vaccines in the US and Europe moving by truck from local production centres. And importantly, air freight's long-established pharma packaging, with a few tweaks and innovations, has proven up to the cool chain task for vaccines.

For the early forecasters, there were many unknowns in March 2020 about future vaccines which were to be created in record

time. But a lot of hard work, collaboration and teamwork across air freight's entire vaccine cool chain made sure that millions of doses are being delivered safely. And although the majority have so far been delivered by road, air freight's role will continue and expand – given the basic facts that some 95% of COVID-19 vaccines are produced in only eight countries but need to be distributed to 220 countries and regions around the world.

Julian Sutch, manager for global accounts – Pharma Industry Solutions – at Emirates SkyCargo, says: "When we first started, there were some massive numbers put out about how the world's air freight capacity was going to be taken up by vaccines, but it did not happen."

Dubai-based Emirates moved the first shipments for vaccine trials in October last year. Says Sutch: "From December onwards we saw live shipments whizzing around. In



“Initially, there was quite a scare that the world’s active containers were going to be used up, but we have actually seen very little use of active containers”

Julian Sutch

terms of challenges, initially there was quite a scare that the world’s active containers were going to be used up, but we have actually seen very little use of active containers.

“There is no aircraft in the world capable of handling any temperature below zero. As an airline, we fly 2°C to 8°C or 15°C to 25°C temperature ranges and it is always the responsibility of the packaging to maintain either -20°C or down to -80°C if that was needed as well.

“Pfizer were very quick to the game and knew that you needed a packaging solution that can last at -80°C for 10 days, requiring 23 kg of dry ice, and that is exactly what they have done so far.”

Only 5% moved by air

Marc Claesen, senior vice president commercial EMEAA at global ground handler WFS, estimates that only 5% of the forecast vaccine volumes have actually moved by air, and that the figure will rise to a maximum of 15% at its peak in the coming months. He also makes the point that air freight professionals, in the first months of the pandemic, had very little real data to assess what the vaccine volumes and production sites would be. It, therefore, made sense to prepare for the worst case.

Claesen adds: “From the beginning of the crisis there were concerns about warehouse capacity and the deep-frozen transport of vaccines and dry ice on aircraft. By December last year those issues were resolved.”

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Marc Claesen

He says that there are now usually four to five pallets per flight with vaccines, which is very manageable. Vaccine producers like Pfizer deliver on a planned last-minute schedule, which does not strain warehouse capacity, and the packaging requires dry ice within acceptable limits.

Dry ice dangers

“We had an average 23 kg of dry ice net per box on-board,” he notes. “But some of the newer challenges that came were the safety of staff handling the products. If you have a large amount of dry ice in a single cooling facility, then you need to have meters measuring the oxygen levels inside. Using dry ice can be very dangerous and the danger is underestimated.”

Air transportation of dry ice – the solid form of carbon dioxide – is strictly controlled under dangerous goods regulations as it becomes CO₂ gas upon evaporation, hence the limits onboard freighters and in warehousing.

Claesen says that a 15% increase in vaccine volumes this year and further ahead will not affect the transport of non-virus pharmaceutical traffic: “It has never been an issue. There is sufficient equipment in the market to handle those volumes,” he notes.

Other critical pharmaceuticals

Sutch of Emirates agrees: “Another focus of ours has been to make sure that the critical pharmaceuticals for all other diseases keep moving. Just look at the cancer drugs that we move all day, every day. We cannot stop shipping those. We also move food products, but pharmaceuticals and these vaccines are number one for us.”

“
Another focus has been to make sure that the critical pharmaceuticals for all other diseases keep moving
”

Julian Sutch



“Using dry ice can be very dangerous – the danger is underestimated”

Marc Claesen
WFS

It is estimated that 99% of non-Covid pharma moves at 5°C, and that while most clinical trials shipments are frozen for the sake of stability, the final end product moves in the normal range for airfreighted pharma.

Deep frozen is not always the answer, as the Moderna and Johnson & Johnson vaccines cannot go below a certain temperature.

Andrea Gruber, head of special cargo at IATA, told a webinar audience in early May that 1.18 billion vaccine doses have already been administered worldwide, while 12.1 billion doses have been secured globally. Of those, some 4 billion doses had by early May been secured and optioned through COVAX, the World Health Organization-led international alliance to provide equitable access to COVID-19 diagnostics, treatments and vaccines to countries, regardless of their wealth. Gruber said that IATA and the major global airlines have assisted in providing transparency on cargo capacity, connectivity and expected requirements.

Vaccine distribution planning

Global freight forwarder Kuehne + Nagel (K+N) is among the major leading pharma logistics specialists that was already playing an important role in vaccine distribution prior to the Covid pandemic. Terrence Sell, global pharma product manager within K+N’s Air Logistics business, says in the early days in assessing Covid-19 vaccine logistics “the biggest issue was lack of information, but it forced us into a positive direction. We formed our own task force, did a lot of research and benchmarked with some of our consulting partners.”

He continues: “We started off with a strategy that is still intact today. We had a good idea where vaccines would go and where the critical mass points were, from a population perspective. We knew who would deal with it themselves and who would have to go to different foundations like UNICEF and Gavi or Hope. We did not wait, we built options for our customers early in the process and worked with them to refine.”

K+N set up its hyper-care team specifically for Covid vaccines and trade-related products of a critical nature: “This team engages from end to end, to ensure that we have operational execution of the highest level based on zero tolerance for failure,” he notes. “That is the goal for us and our customers.”

“In combination with the hyper-care team, our technology increases visibility because

“**The biggest issue was lack of information. We formed our own task force, did a lot of research and benchmarked with some of our consulting partners**”

Terrence Sell

customers want to know, within minutes and not hours or days, where things are and what the next step is.”

Special handling codes for vaccines

Many airlines now have special handling codes for vaccines. Some airlines have two codes, one solely for vaccines, and a second for Personal Protective Equipment (PPE) or other Covid-19 related products such as syringes.

Emirates has one code, Covid priority shipment (CPS), which makes sure that the shipment is on the right flight, connects quickly with another flight and is kept in temperature-controlled dollies or in airside pharma storage. Sutch says that Emirates kept to one code because “it is all very nice having vials of vaccine, but if you don’t have a





“Customers want to know, within minutes and not hours or days, where things are and what the next step is”

Terrence Sell



syringe, then it is useless”.

us. We are in a great strategic location to fly the vaccines and syringes on one flight.”

“ It is all very nice having vials of vaccine, but if you don’t have a syringe, then it is useless ”

Julian Sutch

The US and Europe already have syringes and PPE in situ, but for the developing world – a special area for Emirates – this is often not the case.

However, there is a large stock of syringes kept in Dubai, says Sutch, adding: “That is critical for

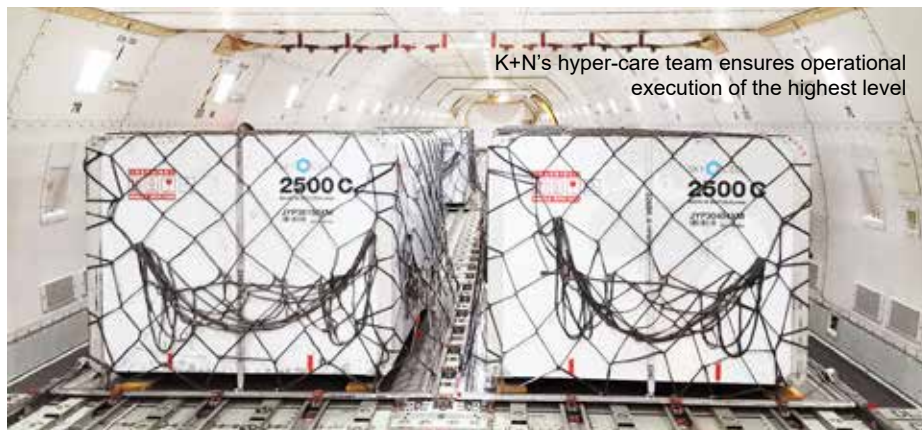
Influx of smaller syringes

Claesen of WFS reports that there has been an influx of smaller syringes from China, so that a greater number of medically approved dosages can be extracted from one vial.

India and Africa concerns

One of the main areas of concern is India, where millions of people have contracted the virus. India’s pharma industry is a major producer of Covid vaccines for worldwide distribution, but the government has stopped exports, including those destined for Africa. The WHO has warned that the risk of a new wave of COVID-19 infections in Africa remains high, due to Africa-bound vaccine doses from the Serum Institute of India being delayed for the foreseeable future, slow vaccine rollouts, and new variants making inroads.

Delays and shortages of vaccine supplies are driving African countries to slip further behind



the rest of the world in the COVID-19 vaccine rollout. As of early May, Africa accounted for only 1% of the vaccines administered worldwide, down from 2% a few weeks earlier.

Meanwhile, the turbulence and fast-changing environment in the procurement of vaccines, with some countries going directly to manufacturers, creates logistical problems for other essential Covid-related goods, for example if vaccines are flown in but the syringes and PPE arrive by ocean freight. Furthermore, in a volatile environment, the air freight booking will have to be made on an ad hoc basis at the prevailing market rate rather than through a block space agreement at an agreed rate level.

Lessons learned

But 12 months, there have been various lessons learned from the early days of uncertainty on when the vaccines will arrive, where they will be produced and in what temperature range they will need to travel.

Says Sutch of Emirates: “We created a team within our airline to give priority to these vaccines, we created a task force, and within that task force we have been speaking with governments and forwarding partners and vaccine manufacturers to see how we as an airline can help distribute these vaccines especially to the developing world. That is why we also became a partner in the Dubai vaccine alliance, which uses the combined capabilities of Emirates and DP World and Humanitarian City – which all have their own infrastructure and capability around the world.

“When projects come up, we can get those vaccines to the developing world, which is very, important. In the US and Europe, all these things can be trucked, no problem; but there are very

many other areas in the world that need them.”

Claesen of WFS says: “First of all it was very clear that, in a very traditional business, new and updated infrastructure is still key and that it contributes to the strategy of the pharmaceutical handlers to invest in decent infrastructure. We need to be able to handle all the pharma, not just the vaccines but also the general cargo, and it is clear that digitisation has to be rolled out throughout the chain with digital checks.”

Example of good forecasting

Claesen adds: “We also realised the importance of good forecasting, to control the volumes that came in. If we get more alignment throughout the chain on forecasting, for example what can be expected and combined with good communications, this is also an example for general cargo throughout the industry and we can benefit from that.”

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If we get more alignment throughout the chain on forecasting, this is also an example for general cargo throughout the industry and we can benefit from that
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Marc Claesen

Gruber of IATA said one element of the top

three challenges for vaccine distribution was the uncertainty in not knowing exactly what was required, noting: “This is where communication was exceptionally important. Manufacturers were developing their vaccines, not really knowing where from, where to, and in which circumstances.”

The second was the temperature control environment for the vaccines and having the appropriate infrastructure to ensure the integrity of the product is maintained throughout transport and distribution.

Security matters

The third element was security, gaining from the PPE experience of March 2020 over the threat of goods being stolen: “Those lessons were definitely learned and applied to a very sensitive product about its safety,” she notes.

K+N’s Terrence Sell emphasises the innovative thinking and rapid response of the industry, noting: “What companies have learned is that we need to be more agile, especially in planning, and to make sure we have the appropriate team that can mobilise quickly as needed.

“The increasing collaboration and communication are making sure that all stakeholders understand the situation. It is important that we are aligned to all assumptions – even if they change – as this will impact our success.”

Sell does not believe that we are yet in the stabilisation phase for the vaccines. Agility, communication and collaboration will be needed, including with airline partners as the vaccine volumes and general cargo steadily increase in 2021, he says. The model that K+N built working with Seabury and BCG has been fairly accurate, he says – so as expected, the volumes will grow as we move to more heavily populated areas of the globe.

Competition for space

As volumes pick up in existing vaccines and new vaccines appear, a greater percentage of global consumers will come out of lockdown and start a spending spree that will see air freight volumes surge, probably in the third and fourth quarters, air freight stakeholders anticipate.

But air freight capacity for vaccines and ‘normal’ pharma will remain a priority in the competition for still-constrained space. ■



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