Assessing the A350 and 777X freighter versions

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Boeing formally launched the freighter version of the Boeing 777X late last month, responding to a threat from Airbus, with its Airbus A350F but also making sure that by 2027 it will have a factory built widebody freighter meeting ICAO emissions in the marketplace.

The US manufacturer announced Qatar Airways as the launch customer with an order for 34 777-8Fs and deliveries starting in 2027. As part of the deal Qatar Airways converted 20 777-8 passenger orders into freighters.

Boeing has been dominant in the widebody factory-built freighter market.

In a statement, Boeing Commercial Airplanes chief executive officer Stan Deal noted that Boeing provides over 90% of the world's dedicated freighter capacity.

It still produces the 767-300ERF, the 777-200F and the 747-8F models and during the pandemic it further increased its market share with new orders.

But as per the 2017 adoption of the new aircraft CO_2 emissions standards, which will reduce the impact of aviation greenhouse gas emissions on the global climate, all three in-production aircraft will not meet the standard by the end of 2027.

The A350F fully meets ICAO's enhanced CO_2 emissions standards.

The 777-8F will carrying approximately 10 tonnes more payload and with more range than the A350F, which has a predicted 118 tonnes payload.

Its cargo volume is 27,000 cubic feet versus 24,500 cubic feet for the A350F.

The Airbus freighter has a 300 nautical miles (nm) advantage with 5,400 nm (8,700 km) however.

It features a maximum take-off weight is 319 tonnes, a 250 tonnes maximum landing weight while its fuselage width is 19ft 5 in.

The A350F has a 232 ft 4 in (70.8 metres) overall length, a 212 ft 5 in wingspan.

The A350F can carry 30 pallets 96 x 125'' or 30x AM-base containers on the main deck as well as 12 pallets 96 x 125'' or 40x LD3 containers on the lower deck.

The fuselage width of the 777-8F is greater than the A350F. The aircraft has similar dimensions as the A350F: 232 ft 6 in overall length, a 212 ft 8 in wingspan.

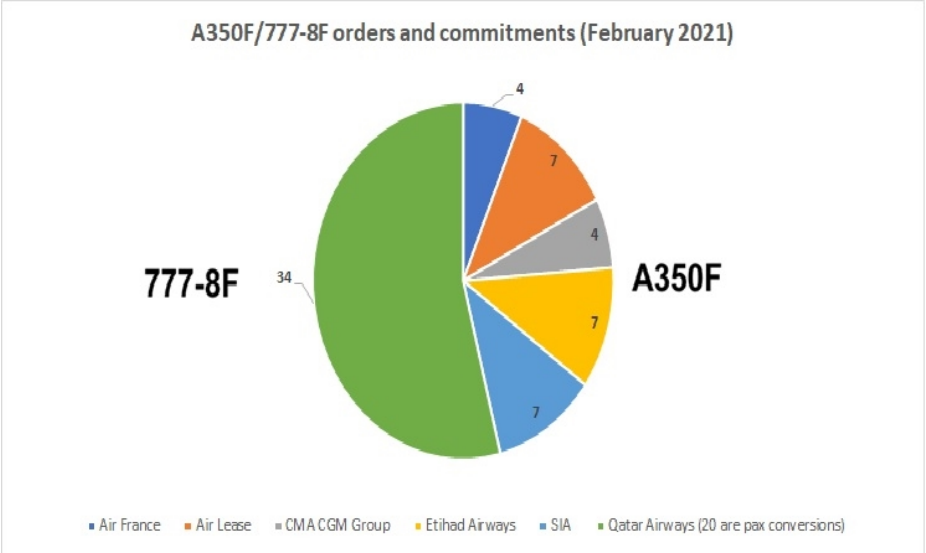
Boeing says maximum payload is 112.3 tonnes over 4,410 nm.

Regarding the cargo hold, the 777-8F can accommodate two extra pallets than the A350F: one on the main deck and one on the lower deck. Compared with the 777F, the 777-8F will take seven more pallets and can carries 17% more volume.

The 777-8F is also expected to have (Boeing has yet to release the data) a higher maximum take-off weight (MTOW) than the A350F, which is 319 tonnes.

In addition to varied performance, the two freighters will use different engines: Boeing will use the specially engineered General Electric GE9X engines, Airbus will use Rolls-Royce Trent XWB-97 engines.

Both manufacturers claim their products can serve all cargo markets and/or open new markets.



At mid-February the A350F had won firm orders and commitments for 29 aircraft from five customers, versus Boeing's sole customer Qatar Airways.

At the Dubai air show, Qatar Airways' chief executive officer Akbar Al Baker said the at the time "yet-to-be launched 777X freighter design will outperform the carrier's current 777F freighter fleet," stressing that discussions around the order were focused on performance as well as pricing.

Qatar Airways operates a fleet of 26 777-200Fs, *Airfinance Journal*'s Fleet Tracker shows.

EIS timing

The Boeing freighter will be the largest freighter in the marketplace when it enters the market in 2027, two years after the A350F, which entry into service is scheduled for 2025.

"2027 is important for two reasons. The first is that the competing Airbus A350F has a targeted EIS of 2025 (with the same certification caveat). A two-year gap is not ideal, but workable, for Boeing - if that's all it is. The second is that ICAO emissions standards taking place in 2027 prohibits the current 777F from being produced from 2028. Boeing needs a replacement in place before this happens," comments Scott Hamilton of Leeham News.

Hamilton adds that this should be doable under ordinary circumstances, but all depends on the timely certification of the 777-9, which is targeted for second half of 2023. "As we know from the Max crisis, smooth certification is no longer a given."

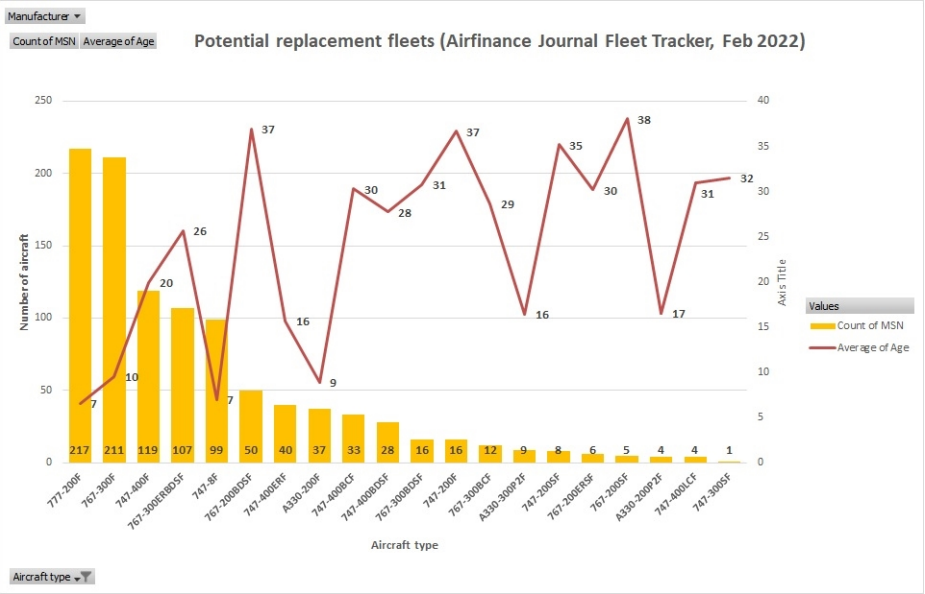
"At first glance the economic cost per tonne kilometre is similar, but both new freighters beat the 777F operating economics," says Bjorn Fehrm of Leeham News.

Fehrm refers both aircraft as classic freighters for forwarders which are different than the e-commerce/package freighters.

"The classic freighters work at 10 pounds per cubic feet capacity while the package freighters are more like 7.5 pound per cubic feet," he says.

Hamilton believes the 777-8F variant sales targets are combination carriers such as Qatar Airways. "All cargo airlines like Southern, Atlas, etc. are also targets," he comments, adding that the new freighter variant will mainly replace 747 freighters, but also MD11Fs and ageing 777-200LRFs.

According to *Airfinance Journal*'s Fleet Tracker there are more than a 1,000 widebody freighters that could be replaced with new variants. The average fleet age is about 16 years.



At the Singapore air show, Singapore Airlines firmed up an order for seven A350Fs and said the new freighters will replace the carrier's existing 747-400F fleet from the fourth quarter of 2025. Singapore Airlines said the A350F fuel consumption is up to 40% lower on similar missions to the 747-400F.

"These new-generation aircraft will substantially increase our operating efficiencies and reduce our fuel burn, making an important contribution towards the success of our long-term decarbonisation goals," commented Singapore Airlines' chief executive officer Goh Choon Phong.

Etihad Airways also committed for seven A350Fs at the air show.

Beyond Air Lease, Hamilton sees a limited appetite from lessors.

Andy Mansell, a managing director at Split Rock Aviation agrees. He says Airbus has worked to keep lessors away from the front-end of their orderbook. "I wonder if that will change with Boeing getting after it," he comments.

"I would be hesitant to order either of them as a lessor as your traditional users are buyers of aircraft. These freighters are 747 replacements and are in a completely different category to the A330Fs, which are 767F replacements," he says.

MUFG's director - aviation research Simon Finn says the new large cargo aircraft are a bit of a departure from the 747s they will replace and while airlines have experienced the 777F, the new offerings are going to move the efficiency needle quite a bit further up the scale.

"From MUFG's perspective, large freighters aren't likely to reach the market acceptance levels of their passenger counterparts so, the quality of the operator base is going to be very important and both the A350F and 777-8F programmes have got off to a good start," he comments.

"The OEM dynamic is interesting as this is Airbus' first go at taking a slice of the large cargo aircraft market (100+ tonnes payload). The A350F may appeal to airlines who already have other Airbus widebodied aircraft and can benefit from commonality cost savings, as well as from the step-change in operating economics. That being said, Boeing has occupied the high ground in the air cargo sector for some time now and it will work to protect its hard-won advantage with the higher volume and greater payload of the 777-8F."

Finn recalls that during the pandemic, many airlines have learned the importance of diversified revenue sources and now see air cargo as an important part of their future.

"Different airlines will require different marketing but, in the final analysis selection may well come down to the relative operating economics – the unit cost improvement that results from the lower fuel burn and enhanced performance of these two new Kings of Cargo."

