



Airbus, Boeing in game of thrones for widebody dominance

July 2014
Farnborough Airshow

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- **Boeing 777X weight figures revealed for first time**
- **3-class 406-seat 777-9X MEW at 362,000lbs, MZFW 527,000lbs, MLW 557,000lbs**
- **4-class 300-seat 777-9X has OEW of 415,000lbs**
- **777-9X 8.8% lighter in MZFW per seat than -300ER, 6.3% lighter than A350-1000**
- **Airbus: Existing A330 more efficient than A330neo on 2-3 hour missions**
- **Airbus: Existing A330 lift-to-drag optimised at 21**
- **GE9X fan size increases to 133.5", wingspan increases to 235.5ft (71.8m)**
- **Boeing ups 280-seat 787-9 range from 8,050nm to 8,300nm, MTOW to 557,000lbs**
- **Air New Zealand: First 787-9 "hundreds of kilograms lighter than forecast"**
- **Customer interest in A330neo explained by limited 787 availability**

As the biennial Farnborough Airshow approaches, the war of words between transatlantic arch-rivals Airbus and Boeing grows increasingly heated alongside the summer temperature. This year the industry's focus falls on Airbus's widebody strategy, with the European plane-maker and its proponents arguing a re-engined A330 equipped with new winglets would level the playing field against Boeing's 787 Dreamliner in the 250-300 seat category, offer the same level of fuel burn at significantly lower capital costs. Nonsense, the other side of the Atlantic retorts, as the 787 has a lower all-in cash operating cost (COC) than the A330neo on all comparable missions.

Worryingly for Airbus, as some industry observers point out, the competitive response now being formulated by Airbus does appear to be a quiet acknowledgement that what it has touted all along – the A350 is "a step ahead of the 787 and a generation beyond 777" is showing signs of weakness. Critics are quick to point to a shrinking A350-800 backlog of 34 examples that creates a void at the bottom of its widebody product portfolio, which will be partially filled by the A330neo, whereas the 777X is increasingly exerting pressure on not only the 350-seat A350-1000 following Dubai-based Emirates Airline's order cancellation, but also its flagship A380 superjumbo, prompting calls from its biggest customer to re-engine the aircraft.

That said, Emirates' scrapping of the US\$16 billion 2007 order for 20 A350-1000s and 50 -900s has more to deal with the behemoth outgrowing the uplift the -1000 can provide ("More repercussions on A380 than A350-1000 on Emirates' cancellation", 23rd Jun, 14), and in a market estimated to feature 8,984 new widebody aircraft over the next 20 years, according to Airbus's 2013 Global Market Forecast (GMF), it is safe to assume that it is large enough to accommodate multiple offerings from both airframers.



Image courtesy of Boeing

A330neo business case not clear-cut against 787 progress

At the lower end of the widebody market lies the 240-seat 787-8 and the 280-seat -9, the latter of which celebrated its first delivery to launch customer Air New Zealand (ANZ) on 9th July. This follows a 1,500-hour flight test programme during which a capacitor powering the ram air turbine (RAT) was found to be wearing prematurely and the altitude-select dial on the mode control panel (MCP) lacking sufficient torque resistance. The 787-9 won its type and 330-minute extended twin engines operations (ETOPS) certificates on exemptions granted by the US Federal Aviation Administration (FAA) that will see a fix for the RAT and MCP issues by February and May 2015, respectively.

With the 787-9 entry into service (EIS) imminent, this symbolises a significant milestone for Chicago-based Boeing which previously saw a breakdown in its global supply chain, 3 years of delivery delays and billions of dollars in cost overruns plaguing its smaller sibling, the baseline -8 variant. From a production standpoint, while the introduction of the -9 into the flow created a temporary bottleneck when combined with a production ramp-up to 10 per month and a hairline crack issue on the composite wing spar of 40 in-production 787s in early March, it increasingly resembles an efficient production line – having shown a 30% unit cost reduction from ZB001, the first -9 ever produced to the 6th unit produced and a 25% reduced total flow time and a 15% improvement on -8 unit cost in 2013. Its Charleston, South Carolina 787 final assembly line (FAL) achieved the production rate of 3 per month despite continued teething issues and caught up with 72% of up to 8,000 jobs behind schedule originally.

For airlines, the 787-9 has incorporated the lessons learnt on the -8, including software fixes that saw its dispatch reliability now averaging 98.5%, in addition to being underweight in terms of manufacturer's empty weight (MEW) with later examples being 2% underweight. The better-than-anticipated payload/range capability is reflected in Boeing raising the -9's maximum take-off weight (MTOW) from 251,000kg to 252,651kg (557,000lbs) and its range from 8,050nm (nautical miles) to 8,300nm in a standard 3-class configuration.

"Boeing has had a weight reduction programme in place for the 787-9 and Air New Zealand's first aircraft will be delivered hundreds of kilograms lighter than forecast," Air New Zealand (ANZ) spokeswoman Emma Field told *Aspire Aviation*.

For Airbus, it is becoming more and more apparent a competitive response has to be formed, as the A350-800 backlog dwindles to comprise orders of just 10 from Yemenia, 6 from Hawaiian, 2 from lessor AWAS, 8 each from Asiana and Aeroflot. Ideas being toyed include stretching the A350-800, although this risks cannibalising the sales of a 315-seat de-rated A350-900 Regional. The best course of actions for Airbus, *Aspire Aviation* reckons, is shelving the A350-800 and converts its loyal customers such as Hawaiian

Airlines to the re-engined A330neo (“Hawaiian Airlines likely an early A330neo customer“, 12th Feb, 14), which has yet to secure board of directors’ approval to begin the industrialisation process.

“There’s been much talk about the A330neo, but obviously we must wait to see whether that will come to pass. For now, the A350-800 does three things for us: it has long range, it’s slightly larger than the A330-200s which we fly now, so it provides for a bit of growth, and it’s more fuel efficient, so it represents a hedge on fuel prices,” Hawaiian Airlines chief executive Mark Dunkerley said in a Bloomberg interview.

Interestingly, while Airbus chief operating officer (COO) customers John Leahy talks up the prospects of the A330neo with a 20-year sale potential of 1,000 aircraft whereas Airbus Group chief executive Tom Enders gives a more subtle forecast by saying “here we are talking hundreds probably. We will take the time it takes to come to a sound decision”, “the A330neo is not a done deal” from a technical perspective, in borrowing the words of Airbus executive vice president (EVP) of strategy and marketing Kiran Rao.

First of all, the A330neo which is likely to be powered exclusively by the Rolls-Royce Trent 7000, based on the Trent 1000-TEN (Thrust Efficiency and New Technology) engine, as firstly reported by **Aviation Week**, will gain 2-3 tonnes of weight – adding around 1 tonne from the larger engine and another 1-2 tonnes associated with centre wing box and fuselage reinforcements. The Trent 1000-TEN which ran for the first time on 3rd June, has a dry weight of 5,765kg, versus the 4,785kg on the 97.4-inch Trent 772C-60 engine. For missions between 2-3 hours, or under 1,200nm, it is very difficult for the 14% block fuel burn per seat reduction to offset the extra deadweight, as the aircraft has minimal fuel penalty arising from carrying fuel.

“For 2-3 hour missions the A330neos are still more efficient than a neo,” Rao was quoted as saying in an **Aviation Week** report.

Beyond 2,000nm and particularly on medium to long-haul sectors, the structural and aerodynamic efficiency of the 787-9 will be hard for the A330neo to match and a new winglet is unlikely to significantly improve its lift-to-drag ratio, which is already optimised at 21 and could be boosted to 22.



Moreover, it is not unthinkable for the A330neo to end up being heavier than the 787-9, despite Airbus's claims to the contrary. The A330-300 has a maximum zero fuel weight (MZFW) of 175 tonnes and the 787-9 181.4 tonnes. While adding 2 tonnes of extra weight still gives the A330neo an advantage on the surface, one should take into account the extra passenger and cargo uplift capability the 787-9 has since $MZFW = OEW + \text{maximum payload}$. The 787-9, for instance, can carry 36 LD-3 containers under floor versus the 33 carried by the A330-300. Once this is factored in, the A330-300neo could possibly be slightly heavier than the 787-9 in terms of OEW.

A noteworthy point is, the per-seat comparisons widely used by both Airbus and Boeing can be skewed by differences in seat count, which has a knock-on impact on empty weights as business-class seats such as Zodiac Aerospace's Cirrus are disproportionately heavier than slim-line economy seats. In addition, Airbus's manufacturer's weight empty (MWE) metric does not include the weights of seats, interiors and galleys, which could amount to 2-3 tonnes on an A320 or 737-sized airplane and 12.4 tonnes (27,327lbs) on a 777-200ER, with galleys weighing 2.67t (5,884lbs) and cargo tares weighing 2.06t (4,540lbs). Although Airbus's and Boeing's operating empty weight (OEW) share pretty much the same definition, OEW is an airline-specific measure in an operator's environment, with more premium seating, galleys and lavatories adding more weight.

Therefore it is essential to keep the business class ratio constant, as well as the galley and lavatory ratio when comparing airplanes on a like-for-like basis. A significant caveat of this approach is the physical space constraint of the airplane, whose configuration could be optimised by adding more seats or could not feasibly accommodate as many seats as its competitor. Boeing's first-class and business-class pitches at 61-inch and 39-inch, respectively, does not help clarifying matters either, whereas Airbus's is more realistic at 60-inch.

For example, Airbus claims its 400-seat 199-tonne A330-300 Regional in a 9-abreast configuration with 24 business class and 376 economy class seats has the same cash operating cost (COC) per seat and a 12% lower direct operating cost (DOC) per seat than the 380-seat 787-9 with 24 business and 356 economy seats, primarily owing to cheaper monthly lease rate for the A330-300 at US\$900,000 versus US\$1.25 million for the 787-9. Once the 787-9's longer and wider cabin is taken into consideration at 56m and 5.49m, respectively, versus the A330-300's 50.35m and 5.28m, the comparison may no longer hold ("Boeing 787 availability key in fending off Airbus A330neo", 21st Feb, 14).

Furthermore, it is worthwhile to consider whether the 295-seat 2-class A330-300neo's real competitor is the 323-seat 787-10, which has a range of 7,020nm and a maximum take-off weight (MTOW) of 252,651kg (557,000lbs). A 2-class 787-10 could accommodate 360 seats with a MEW of 261,000lbs according to Rev E specification or 275,000lbs in a 260-seat 3-class configuration, *Aspire Aviation* can exclusively reveal. This equates to a capability of carrying 60 more passengers in a 2-class configuration with a total cargo volume of 6,187ft³ (175m³) versus the A330-300neo's 5,751ft³ (162.8m³).

This is because Asia/Pacific passenger traffic has been booming with a 7.2% increase in revenue passenger kilometres (RPKs) for the first 5 months of 2014, International Air Transport Association (IATA) figures showed and Boeing forecasts a 6.3% annual growth rate in traffic within the region over the next 20 years, with traffic within China soaring 6.6% a year, according to its latest 2014 current market outlook (CMO).

Having said that, the A330neo does not need to amass the 1,200 orders envisaged by Air Lease Corporation (ALC) founder Steven Udvar-Hazy to be deemed a success and recoup the US\$2 billion development cost. With a large installed base of A330s, such as the 31 -200s and 11 -300s that Air China operates, 36 -300s for Cathay Pacific and another 18 operated by its wholly-owned subsidiary Dragonair, 22 -300s at China Airlines, 34 and 27 operated by China Eastern and China Southern Airlines, Airbus only needs to convert a few of them in order to make the A330neo programme profitable.

Such examples include Virgin Atlantic which operates 10 A330-300s and will operate its inaugural 264-seat 787-9 flight on the London Heathrow-Boston route from 28th October onwards, as well as evaluating a replacement for 7 London Gatwick-based 747-400s; and its 49% shareholder Delta Air Lines, which operates 11 -200s, 21 -300s and has an order for 10 242-tonne -300s. Delta also has a request for proposal (RFP) for 50 widebody aircraft and is said to favour the A330neo, although its chief executive Richard Anderson also said “we’re hopeful that the 787-9, with all the lessons learned on the -8, is going to be a really viable airplane”.

“On paper, the A330neo looks like a fantastic aircraft, but it depends on the price offering. It has interesting fuel-burn characteristics and will be appealing to a huge number of airlines,” Virgin Atlantic head of strategic fleet planning Alan Leeks told flightglobal, while chairman Richard Branson told Bloomberg that “it would make a lot of sense for us to have some -10s. We are definitely exploring that.”

	A350-900	A350-1000	777-300ER	777-8X	777-9X	787-10
3-class pax no.	314	350	368	350	406	323
	315 (2-class Regional)					360 (2-class)
Range (nm)	8,100	8,400	7,825	9,300	8,200	7,020
	6,800 (regional)					
MTOW (kg)	268,000	308,000	351,530	351,534	351,534	252,651
	250,000 (regional)			775,000lbs	775,000lbs	557,000lbs
MLW (kg)	205,000	233,000	251,290	n/a	252,651	201,800
					557,000lbs	445,000lbs
MZFW (kg)	192,000	220,000	237,683	n/a	239,043	192,800
					527,000lbs	425,000lbs
MEW/MWE (kg)	119,000	n/a	337,871lbs	n/a	362,000lbs (3-class 406-seat; Rev E)	261,000lbs (2-class 360-seat; Rev E)
						275,000lbs (3-class 260-seat; Rev E)
OEW/OWE (kg)	n/a	155,000	167,829	n/a	188,241	n/a
					415,000lbs (4-class 300-seat, Rev E)	
Overall length (m)	66.89	73.88	73.9	69.55	76.48	68.28
Wingspan (m)	64.75	64.75	64.8	71.8 (unfolded)	71.8 (unfolded)	60.1
				64.8 (folded)	64.8 (folded)	
Diameter (m)	5.96	5.96	6.19	6.19	6.19	5.77

Cabin Width (m)	5.61	5.61	5.86	5.96	5.96	5.49
Engines	Rolls-Royce Trent XWB-84	Rolls-Royce Trent XWB-97	General Electric GE90-115B	General Electric GE9X	General Electric GE9X	General Electric GEnx-1B PIP 2
						Rolls-Royce Trent 1000-TEN
Thrust (lbs)	84,000	97,000	115,300	105,000	105,000	76,000
	70,000 (regional)					

Source: Airbus, Boeing, *Aspire Aviation* estimates

A350, 777X vie for crown of ultra long-haul leader

A notch above the small widebody category, the A350 and 777X are separately making progress in their “game of thrones” for widebody dominance. The A350 XWB is now closing in on its 2,500-hour flight test campaign after having flown 2,100 hours. The A350 recently **completed** cross-wind tests with MSN001 in Keflavik, Iceland; MSN005 flew for the first time on 20 June and MSN002 conducted 2 early long flights (ELFs). It has **submitted** its maintenance programme to the European Aviation Safety Agency (EASA) ahead of first delivery to Qatar Airways in early-September 2014.

Airbus is reasonably confident the A350 can emerge unscathed from Emirates’ blow and rightly so, as it boasts a nearly flawless execution on the A350 programme after placing 90% of suppliers under constant surveillance and 7.5% under joint improvement plan (JIP). 2.5% of suppliers are deemed as high-risk and transformation plans have been developed jointly to remedy the situation.

With A350 production slots running out until 2019, the most daunting task lying ahead is not remedying shortfall in performance as perceived by some after the Emirates cancellation. The A350-900 is going to match its block fuel burn specification owing to better-than-anticipated specific fuel consumption (SFC) of the Rolls-Royce Trent XWB-84 engine despite the aircraft being 3.3 tonnes overweight with a 119 tonnes manufacturers weight empty (MEW). Nor is it filling the slots vacated by Emirates as Airbus can seize on the opportunity to improve programme profitability.

“It is not good news commercially but not bad news financially. There is certainly going to be no hole in production,” Airbus chief operating officer (COO) customers John Leahy **asserted**.

Rather, it is the production ramp-up to 10 per month by 2018 that poses the biggest challenge in satisfying the 3,460 medium widebody aircraft being demanded by the market valued at US\$1.16 trillion over the next 20 years, according to Boeing’s 2014 latest market forecast.

What remains controversial and heavily contested by both sides of the Atlantic, however, is what market share each of them will attain in a lucrative market with multibillion dollars worth of orders split between them.

Boeing argues its complete product lineup of the 787 and 777X will “box in” the A350 family, whereas Airbus refutes by claiming the 406-seat 777-9X is in a “no man’s land” and “if the 777-300ER is so great, why did [Boeing] launch the -9X?”

“If Airbus doesn’t do something with their product strategy, they’re headed to 30-35% market share,” Boeing vice president (VP) of marketing Randy Tinseth contended.

For the 777X, it seems to be gaining momentum after Emirates finalised a record-breaking US\$56 billion deal for 150 777Xs, consisting of 115 777-9Xs and 35 -8Xs; and Boeing winning the fiercely-contested ANA order for 20 examples. Other potential customers include Ethiopian Airlines for 10 examples and aircraft lessor Aer Cap, British Airways (BA), Philippine Airlines (PAL), Eva Air and Singapore Airlines (SIA) which may announce an order of around 20 aircraft at Farnborough and other 777-300ER operators that have collectively placed 722 firm orders, such as Air France that has 38 examples in its fleet.

While Airbus claims the 406-seat 777-9X is 30 tonnes heavier than the 350-seat A350-1000 with the former’s operating empty weight (OEW) at 190 tonnes and the latter at 155 tonnes, such a comparison is a little misleading as the 777-9X is considerably larger than the A350-1000. According to *Aspire Aviation*’s multiple sources at Boeing, a 4-class 300-seat 777-9X has an OEW of 188,241kg (415,000lbs) versus the 3-class 368-seat 777-300ER’s OEW of 167,829kg. The 777-9X also has a manufacturer’s empty weight (MEW) of 362,000lbs versus the 337,871lbs for the -300ER, these sources say.

Make no mistake, seat count and class ratio will have an impact on any MEW and OEW metric, but one could use the maximum zero fuel weight (MZFW) as a rough gauge for the 777-9X, -300ER and A350-1000’s respective weight efficiencies. The 3-class 406-seat 777-9X has a MZFW of 239,043kg, whereas the 368-seat 777-300ER’s and 350-seat A350-1000’s stand at 237,683kg and 220,000kg, respectively. Translating into per-seat figure yields 628.57kg per seat for the 777-9X, 8.8% lower than the 645.88kg figure for the -300ER and 6.33% lighter than the 628.57kg figure for the A350-1000.

Provided that Boeing execute the 777-9X well with tight weight control, which balances the need for larger 787-syled dimmable windows and lower cabin altitude that add weight (“Boeing 777X to spark mini-jumbo war“, 28th Mar, 13), the 777-9X is going to be a weight efficient airplane that has an estimated 4.7% lower seat-mile cost than the A350-1000.

Indeed, the 777X only gets larger with an extension of the folding wingtip (FWT) that sees its unfolded wingspan increasing to 71.8m (235.5ft) from 71.1m while keeping its folded wingspan at 64.8m, thereby in compliance with International Civil Aviation Organisation (ICAO) Code E airport compatibility rule (“Boeing 777X targets to become ultra long-haul leader“, 1st Jan, 14). Other changes include an increase in the General Electric GE9X engine fan size to 133.5-inch from 132-inch as a result of a thrust increase from 102,000lbs to 105,000lbs, the elimination of noise-reducing chevrons on the engine nacelle, splitting of the outboard flap into two with the addition of an extra hinge to prevent wing flutter, and a wider vertical stabiliser.

It is so large such that Boeing has to demolish buildings at its Everett site for a new 1.3 million ft² carbon fibre reinforced polymer (CFRP) wing plant and a new 350,000ft² final assembly plant with the Frederickson plant building its CFRP empennage. Japanese suppliers which secured 21% of the primary structure work also have to expand their production facilities with Fuji Heavy Industries (FHI) constructing a new plant for building the 777X’s wing box.

That said, *Aspire Aviation* believes the medium widebody market is large and robust enough to accommodate both the 777X and the A350-1000, especially the latter would be an optimised 350-seater whereas the 777-8X, with the same wing and maximum take-off weight (MTOW) as the -9X, is optimised for 9,300nm missions and opening new routes such as Rome-Sydney and Sydney-New York John F. Kennedy (JFK) International Airport. Not that the -8X has an inferior payload/range capability than the A350-1000, as it is capable of carrying 17 tonnes of additional cargoes over the same stage length, but its aircraft structure is designed and built for such missions, therefore it is difficult to see it achieving the touted 5% lower block fuel burn per seat advantage.

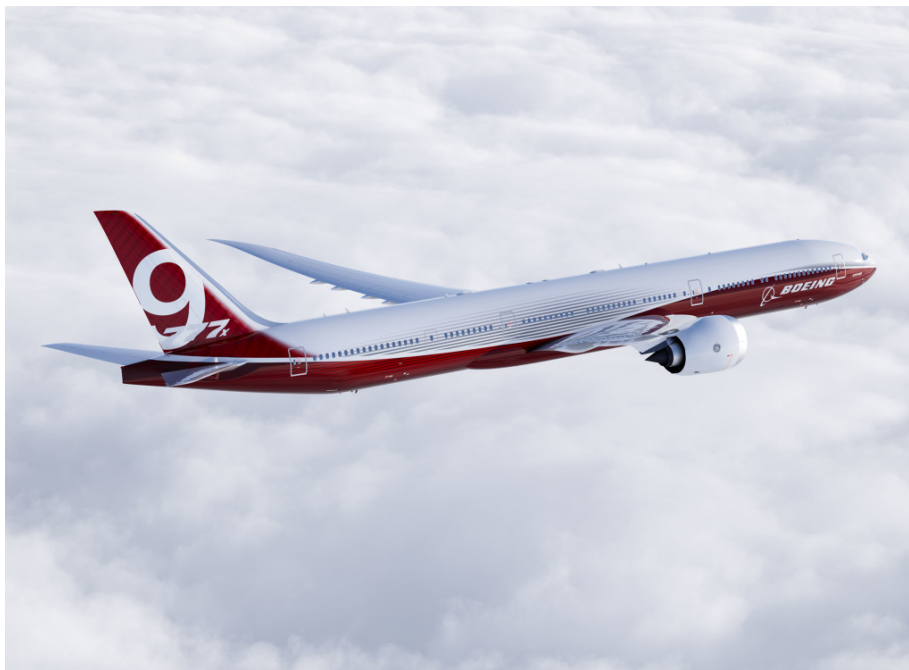


Image Courtesy of Boeing

Winner's curse

Whoever wins the throne of the small and medium widebody dominance, however, there is a price to pay for the success in the form of the winner's curse, with the A350-1000 and particularly the 406-seat 777-9X cannibalising sales of Airbus's and Boeing's very large airplane (VLA) offerings – the flagship A380 superjumbo and 747-8I Intercontinental.

For passengers, the 525-seat A380's lure remains even after 7 years in service, with Emirates divisional vice president (VP) of commercial operations west Hubert Frach telling *flightglobal* "there is no change in terms of attractiveness of the A380. The load factor for the A380 fleet is above average and for us it is a profitable aircraft. It is a customer magnet".

"Passengers like to fly on the A380. When airlines put the A380 on routes, if they put it at the peak time, departures are going to capture the largest percentage of yield," Amadeo chief executive Mark Lapidus concurred.

Airbus is also championing the A380's merits in supplying capacity at lower costs, as British Airways (BA) replaced its 3 daily 747-400 flights with 2 A380 flights which saw a 19% lower trip cost while featuring 5% more premium seats and 7% fewer non-premium seats, thereby being yield-accretive. Air France also substituted 1 272-seat 2-class A340-300 and 1 270-seat 3-class 777-200ER Paris Charles de Gaulle-New York John F. Kennedy (JFK) flights with a 538-seat 3-class A380, which leads to a 17% lower cash operating cost (COC) per seat.

Furthermore, with the number of mega-cities, namely those with more than 10,000 daily long-haul passengers on flights more than 2,000nm long, doubling over the next 20 years from 42 to 89 by 2032, as well as 75% more congested airports, Airbus says the A380 will free up precious slot pairs at airports such as London Heathrow which operates at 97% of runway capacity for growth.

Yet this overlooks the yield dilution arising from the "spillover demand" as a result of the reduction in frequencies, with price-inelastic last-minute business travellers selecting rivals which offer preferred departure times. Examples include Qantas trimming its Hong Kong-Sydney flight frequencies from twice-daily to daily with an A380 while Cathay Pacific flies 4-times daily on the route.

"The business traveller wants frequency. Frequency means you need smaller gauge with range and speed, with good seat mile costs. And in fact, what you want is seat-mile costs lower than the 747-400 with about 100 fewer seats. RASM goes up; CASM goes down, range is longer. You get the drift of why that airplane [A330neo] was an important one and why the A350 will be important. And when you start talking about 350-400 passengers, if you ask a customer do I want to fly – do I want to have a choice of 8 flights a day, 10 flights a day JFK-London or do I want 3, they're going to pick 10 every time," Delta Air Lines chief executive Richard Anderson said in a June Bloomberg interview.

Hence the 777-9X would offer incremental growth capacity and the same benefits of yield increase without the inherent financial risk the VLAs carry in being difficult to fill and having a higher break-even load factor (BELF) where $BELF = CASK/yield$. It would be particularly attractive for carriers such as Hong Kong-based Cathay Pacific which operates 5 times daily to London Heathrow with 2 pairs of flights – CX255 and CX251 departing within 1 hour of each other and another pair – CX239 and CX237 departing within 20 minutes of each other.

It is frequency, not capacity, that forms the trend, with a 60% increase in frequency from 2000 to 2014 on a 58% increase in capacity, thereby leading to a 2% reduction in the number of seats per flight from 304 to 299, Boeing Commercial Airplanes (BCA) vice president (VP) of marketing Randy Tinseth pointed out.

In addition, VLAs have a significant drawback versus the big-twins in having a limited size of revenue cargo volume, or underbelly space that airlines can sell and earn a 60-70% net profit margin owing to the fixed costs being shared with the passenger operation. The A380 and 747-8I have revenue cargo volumes of 2,995ft³ and 3,895ft³, respectively, out of a 5,875ft³ total cargo volume and 6,345ft³, versus the revenue cargo volume of 5,200ft³ on the Boeing 777-300ER out of a total cargo volume of 7,120ft³, let alone the 777-9X that has an even longer fuselage with a length of 76.48m.

This matters for carriers such as Cathay Pacific which carries 50% of all its cargo in underbelly space on passenger aircraft and carries around 100 tonnes and 80 tonnes of belly cargoes to London Heathrow and Los Angeles, respectively, or around 20 tonnes per 777-300ER flight (“Cathay Pacific in for the long-haul”, 1st Apr, 14).

In light of these, Boeing is counting on the “Project Ozark” – increasing the 747-8I’s maximum take-off weight (MTOW) to 1 million pounds from 987,000lbs, raising its range to 8,200nm, achieving a weight reduction of 10,000lbs by the end of 2014, a target originally envisioned by end-2016, to drum up sales and restore the 747 production rate to 1.75 a month from the current rate of 1.5.

On the other hand, Airbus is evaluating the prospect of a re-engined A380neo, after its biggest customer Emirates urges Airbus to do so.

A350-1000 and 777-9X COC positioning



“There’s a distinct possibility that the A380neo, if built, would give us an improvement in economics of up to 10-12% so that is definitely worth having. And I’m hoping to move on that fairly soon. Rolls can do a better engine. We can get more weight out of the aircraft. We can improve the aerodynamics,” Emirates president Tim Clark was quoted as saying.

“We can just encourage Airbus to continue and speed up the possible improvements, especially the fuel efficiency and a neo version. If the neo version is coming we could consider ordering more planes,” Emirates chief commercial officer Thierry Antinori stressed.

While such a make-over with a Rolls-Royce RB3025 engine might make sense for its biggest customer, whose 50th A380 was delivered on 10th July and its remaining 90 orders account for 67% of the A380’s 135 unfilled backlog, it could be a pause for concern for the aircraft financing community when Singapore Airlines’ 10-year old A380s begin to come off lease in 2017 and Emirates begins to retire its first examples in accordance with its well-publicised 12-year replacement cycle by the turn of the decade. If it does so, the European plane-maker risks depressing the residual value of an airplane with a limited customer base and little freighter conversion prospect.

Therefore it is understandable for Amadeo's Lapidus to brush off such an idea, saying "at 11-abreast, the A380 will have 30% better cash operating costs than the Boeing 777-300ER. 777-9X economics will work well at 10-abreast, but not as well as the A380."

Airbus will have to address this dilemma sooner or later – on the one hand, better economics would improve the A380's attractiveness for carriers in light of a diminishing backlog which contains uncertain orders such as Virgin Atlantic's one for 6 examples, Qantas's remaining 8 unfilled orders and Amadeo's speculative one that has yet to secure a customer, compounded by vacant slots in as early as 2015; on the other hand, no one dares to tinker a flagship product that saw both Skymark Airlines and Qatar Airways' deliveries being delayed for a few weeks over interior fitting issues by offering an 11-abreast economy class enabled by raising the main deck floor by 2 inches and adding 35-40 additional seats.

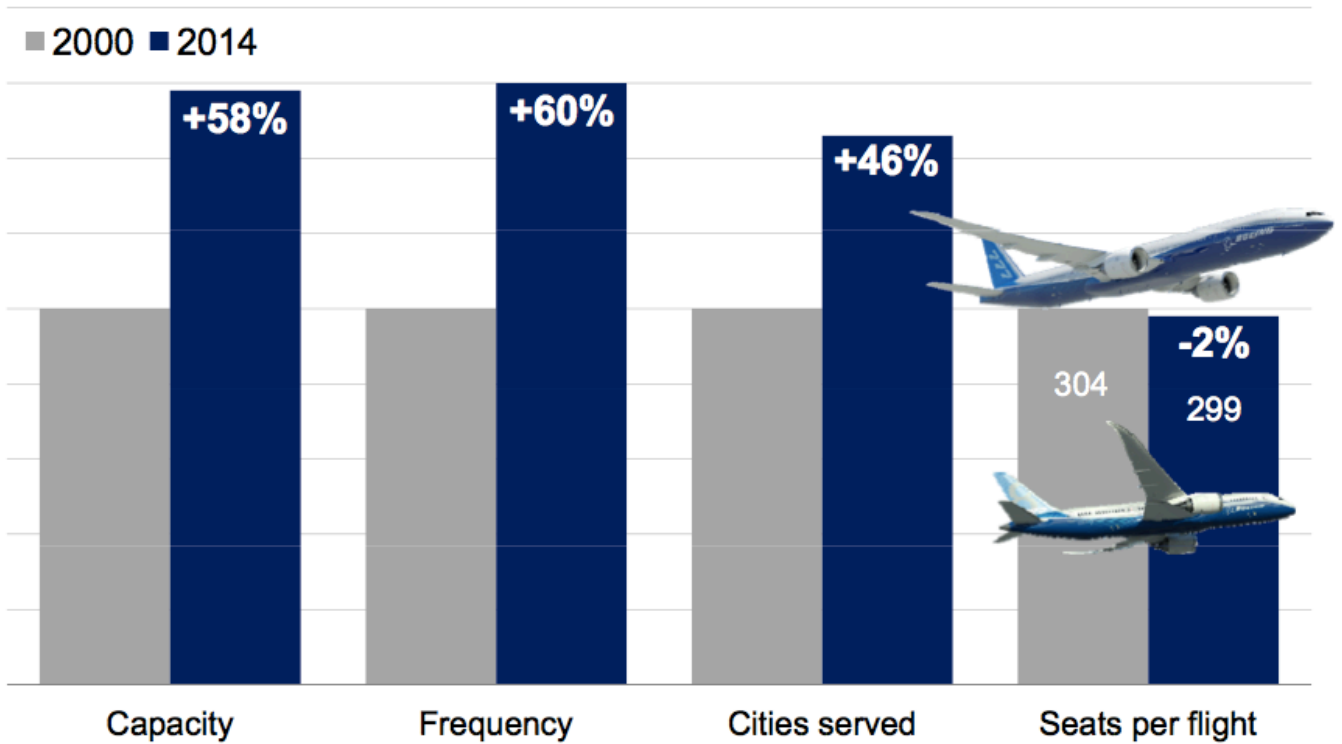
Quite frankly, Airbus does not appear to be making a decision on the A380 anytime soon, as the market acceptance of the revamped version of a product that has only garnered 234 firm orders after being for sales for 14 years and will break-even on a unit bases in 2015 but not on an aircraft programme basis appears questionable. Emirates has also indicated that it will take the last 25 of its latest order for 50 examples under the existing version should Airbus decide not to press ahead with the A380neo plan and that "there's nothing out there that resembles what the A380 can do, at all, for us".

In conclusion, while it remains to be seen whether it is Airbus or Boeing that will end up sitting at the top in the game of thrones for widebody dominance, as Airbus begins to line up launch orders for the re-engined A330neo from AirAsia X and a few aircraft lessors ahead of the Farnborough Airshow, there will be a less and less important role for the very large airplanes (VLAs), for which Boeing foresees a market of only 620 aircraft in its 2014 current market outlook (CMO), down from 760 in the prior year.

It turns out that it is not the A380, nor the 747-8I, that "owns the sky", but the "big twins" or "mini-jumbos" such as the A350 XWB and 777X that usher in a new era of efficiency.

Expansion - not size - driving growth of mega-cities

Top 25 long-haul airports



SOURCE: Industry schedules

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