

## Paris Air Show 2017

### The IBA Review

Not since 2012 have we seen Boeing take the lead in orders (firm plus Memorandum of Understanding [MoU]) at either Paris or Farnborough. In 2012 the reason was the launch of the 737 Max only 11 months previously; this time the winner was also the 737 Max 8, but with the added benefit of some launch orders for the 737 Max 10.

Once all the firm, MoUs, and Options are taken into account, the 2017 show was very successful – with a total of 1,258 units. OEMs may argue that the number is closer to 1,481 but that would include the conversions from existing orders already so these need to be removed from the equation.

The Max was out front with 573 firm/MoUs followed by the neo with 277. Boeing led the way with the 787 over the XWB at 5:1 and as expected some current generation aircraft also made it on to the list.

The lessors were most bullish with their orders; the recent poor sale leaseback performance looks to be the driver. It will be interesting to see how these speculative orders will be priced closer to delivery. Airlines will always give a steady stream of orders, because there is the added bonus of a new model launch and the launch discounts that come with it.

As expected for Boeing and Airbus given the diminishing returns for the traditional sale and leaseback market, the order tally was dominated by the lessors (484 firm + MoUs), over the airlines (431 firm + MoUs), with 155 coming from undisclosed customers; remarkably reminiscent of the Farnborough 2014 final tally. These figures do not include the 208 conversions to Max 10s from smaller 737 Max aircraft.

Excluding the large GECAS order, as predicted the bulk of orders came from the Chinese owned lessors, with Avolon, CALC and CDB jumping out, whilst Tibet Financial Leasing made its entry statement with an order for 40 aircraft split evenly between the neo and Max. Further east, JP Lease Products through JIA made its first direct purchase with the OEMs.

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## Order Overview

1,070 firm orders and Letters of Intent (LoI) / Memorandum of Understanding (MoU) were placed along with 188 options. Adjacent we provide a summarised order overview followed by a more defined look at orders.

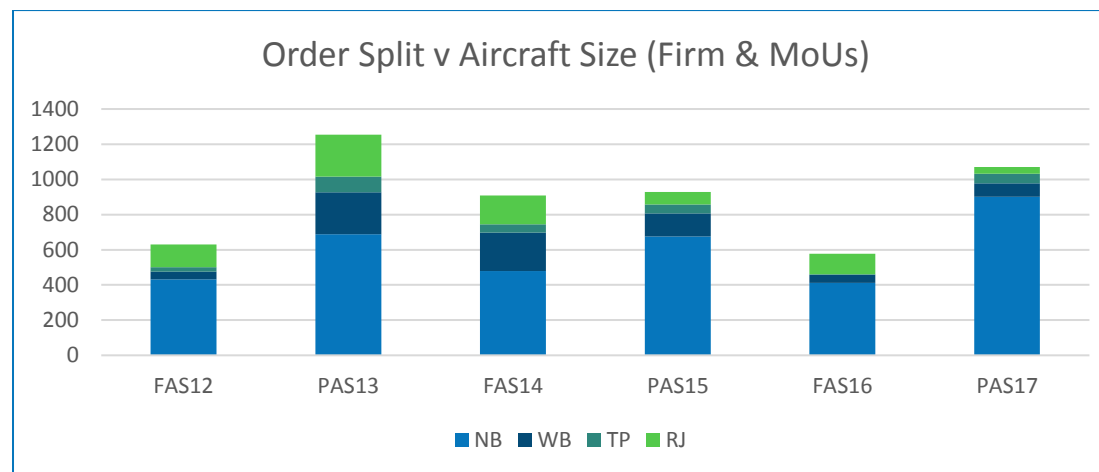
Based on firm and MoUs, as expected the narrowbody aircraft segment dominated the order split obtaining 84% of share with the likes of Boeing 737 MAX and Airbus A320neo aircraft. This was followed by the widebody segment with 787 8/9s and the A330 and A350 taking 7% of orders.

Embraer's regional jets scooped 4% of orders and turboprops from Bombardier and ATR obtained 5% of the share.

Order are significantly up on 2016 with more orders for narrowbodies, turboprops and widebodies this year.

In an overall order metric, Boeing led the order tally with just over 59% followed by Airbus with 32%. Please note these figures include firm orders and MoUs only.

## Orders by Aircraft segment.



Firm and MoU only

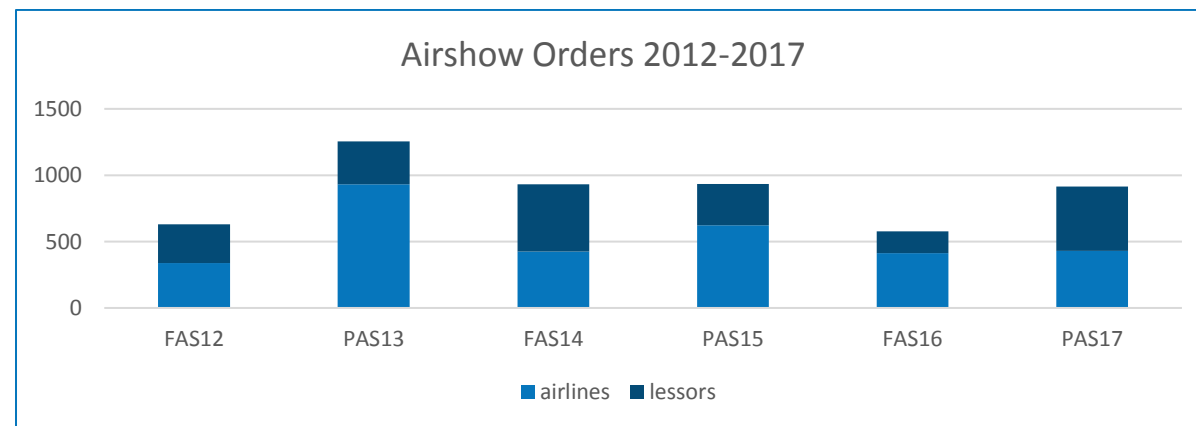
	NB	WB	TP	RJ	Total
FAS12	431	45	25	130	631
PAS13	688	238	89	240	1255
FAS14	480	217	48	163	908
PAS15	675	132	51	70	928
FAS16	412	45	4	116	577
PAS17	902	76	54	38	1070

In terms of order distribution, airlines/operators and lessors comprised 86% of firm and MoUs, of which 53% from lessors and 47% from airlines. The graphs to the right show the increase in orders this year from Lessors v last year by % and actuals.

Boeing's Max was the hot spot of the show with 573 orders followed by the neo at 277 orders.

Type	Firm & MoU
Max	573
neo	277
787	50
ceo	49
Q400	39
E2	30
ATR	15
XWB	10
A330neo	8
E1	8
777	6
NG	3
A330ceo	2

### Order Distribution (Firm and MoU only)



## Orders by Manufacturer

### Boeing

Interestingly all 737 Max models got a mention this year in the order list, including the Max 7 and Max 8 200, with the notable exception of the Max 9 which ironically, was physically present at the show.

Closer scrutiny of Max 10 orders does highlight some interest from the lessors, although the bulk came from 10 operators led by United and Lion Air, the majority coming from converting previous Max orders.

The launch of the 737 Max 10, Boeing's attempt at halting the market penetration of the A321neo, does beg the question of whether there is enough space in the market for 4 body sizes and the high-density Max 8 200. At no point in history have either member of the duopoly managed to sustain market demand for all members of the family at the same time. Economically, a simple stretch or shrink looks straightforward and good for commonality, but there comes a point when the aircraft becomes too heavy per seat for the shrink to work, or the design must be changed too much for the stretch.

The A318 and 737-600 were casualties for the ceo/NG families, whilst the A319neo, and 737 Max 7 have yet to spark much interest for the neo/MAX generation. But where does the Max 9 fit into the equation now? It already had a dubious backlog compared to the A321neo because only a small number were announced as Max 9s (as opposed to Max family), and this has introduced greater risk to complicate matters further. If the Max 10 lives up to expectation, then the fleet could switch over leaving the Max 9 relegated to fourth place, or we end up with a 10% spread on both the Max 9 and 10, leaving investors with a choice to make. At least the engine choice will make things simpler.

To add to this, Boeing also continued with the early thoughts of an NMA (New Midsize Airplane) – or possibly the 797! Whilst many have pined for a replacement to the 757, many also believe that the potential market take-up could be limited. However, it is likely to offer mid-200s capacity that can fly 5,000nm+. Boeing predicts a market of 4,000 for it, but how that would eat into the low end of the A330/787 market, or the upper end of the A321/Max 10 market, is yet to be determined.

Pricing will be interesting as this aircraft will essentially be bridging the cost-per-seat between narrow and widebody aircraft – size versus range. Operators will be seeking something that costs around US\$65-70m, yet the widebody approach will push it above US\$80m. Should Boeing go down this route, what will Airbus do? Possibly squeeze more performance out of the A321, down-gauge the A330/A350, or produce an all-new aircraft. Alternatively, they may feel that the current product line already handles that space, so do nothing other than optimise for certain operations. There has also been plenty of talk surrounding the engine technology. Rolls-Royce has been developing in this space for some time and we may expect to see CFM step up too.

## Airbus

Airbus also managed to do well out of Paris with a total of 277 firm and MoUs for the A320neo family, and even a further 49 orders for the ceo! Whether this is simply because of fuel price, last minute last off-the-line slots, or the need for operators to be assured that the GTF engine has got rid of its teething problems is up to the individual, but it does push the last off-the-line effect further to the right.

Airbus also launched the A380plus as a potential option to enhance the seat mile costs with a higher MTOW, larger seat capacity and new winglet. No specific mention of the engine upgrade was made, although we would also expect some form of PIP to make its way from Rolls-Royce to enhance the fuel burn and maintenance cost. Despite the physical presence of the A380 and its new winglet at the show, no further orders were placed at this stage, and it has been four years since an order for the type has been placed at either Paris or Farnborough.

## ATR and Bombardier

Both ATR and Bombardier also managed to get in on the action this year with a total of 54 orders (firm and LOI), the Canadian OEM moving ahead with a large LOI from Spicejet for 25 Q400s and further options for another 25; a significantly better performance than last year when only 4 orders were placed for the Q400. Bombardier was unable to gain any more traction in the regional jet space as Embraer once again took the lead by being the only OEM to secure any orders in that market segment. Interestingly, 8 orders were placed for current generation E1 aircraft, with 30 orders secured for the new E2, along with options for 20 more. No announcements were made by Sukhoi, Comac or MRJ to gain any further market traction in the regional space.

Order breakdown tables:

BOEING				
Customer	Model	No. Ordered	Order Status	Options
AerCap	787-9	30	Firm	-
AerCap	737 Max 10		Conv from previous Max order	-
ALC	737 Max 7	5	MoU	-
ALC	737 Max 8	7	MoU	-
ALAFCO	737 Max 8	20	MoU	-
Aviation Capital Group	737 Max 10	20	Firm	-
Avolon	737 Max 8	75	MoU	50
Azerbaijan Airlines	787-8	4	MoU	-
Blue Air	737 Max	6	Firm	-
BOC Aviation	737 Max 10	10	MoU	-
CDB Leasing	737 Max 10	10	MoU	-
CDB Leasing	737 Max 8	42	MoU	-
CDB Leasing	787-9	8	MoU	-
China Aircraft Leasing	737 Max	35	Firm	-
China Aircraft Leasing	737 Max 10	15	Firm	-
Copa Airlines	737 Max 10		Conv from previous Max order	-
Donghai Airlines	737 Max 10		Con from previous Max order	-
EI AI	787-8	2	Firm order (firmed from 2015 MoU)	-
EI AI	787-9	1	Firm order (firmed from 2015 MoU)	-
Ethiopian Airlines	737 Max 8	10	Conv options (prev. unidentified order)	-
Ethiopian Airlines	777F	2	MoU	-
GECAS	737 Max 10		Conv from Max 8	-
Japan Investment Advisor	737 Max 8	10	MoU	-
Lion Air	737 Max 10	50	MoU	-
Malaysia Airlines	737 Max 10		Conv from previous Max 8 order	-
Mauritania Airlines	737 Max 8	1	Firm	-

BOEING				
Customer	Model	No. Ordered	Order Status	Options
Monarch	737 Max 8	15	Firm	-
Norwegian	737 Max 8	2	Firm	-
Okay Airways	737 Max 10	8	Firm	-
Okay Airways	737 Max 8	7	Firm	-
Okay Airways	787-9	5	MoU	-
Qatar Airways	737 Max 8	20	Firmed order from October 2016	40
Ruili Airlines	737 Max	20	MoU	-
Ryanair	737 Max 200	10	Firm	-
SpiceJet	737 Max 10	20	MoU	-
SpiceJet	737 Max 10		MoU conversion from Max 8 MoU	-
Tassili Airlines	737-800	3	Firm	-
Tibet Financial Leasing	737 Max 10	10	MoU	-
Tibet Financial Leasing	737 Max 8	10	MoU	-
TUI Group	737 Max 10		Conv from previous Max order	-
Undisclosed customer (1)	737 Max 8	125	MoU	50
United Airlines	737 Max 10		Conv from previous Max order	-
United Airlines	777-300ER	4	Firm	-
Xiamen Airlines	737 Max 10	10	MoU	-

## Order breakdown tables cont:

AIRBUS				
Customer	Model	No. Ordered	Order Status	Options
ALC	A321neo	12	Firm	-
AirAsia	A320ceo	14	MoU	-
CDB Leasing	A320neo	30	MoU	-
CDB Leasing	A321neo	15	MoU	-
Delta Air Lines	A321ceo	10	Firm	-
Ethiopian Airlines	A350-900XWB	10	Firm	-
GECAS	A320neo family	100	Firm	-
Hi Fly	A330-200	2	Firm	-
Iran Airtours	A320neo	45	MoU	-
Tibet Financial Leasing	A321neo	20	MoU	-
Viva Air Columbia	A320ceo	15	MoU	-
Viva Air Columbia	A320neo	35	MoU	-
Wizz Air	A321ceo	10	Firm	-
Zagros Airlines	A320neo	20	MoU	-
Zagros Airlines	A330neo	8	MoU	-

ATR				
Customer	Model	No. Ordered	Order Status	Options
Air Senegal	ATR72-600	2	Firm	-
Tianju	ATR42-600	10	LOI	-
Xuzhou Hantong	ATR42-600	3	LOI	-

BOMBARDIER				
Customer	Model	No. Ordered	Order Status	Options
Cem Air	DHC-8-Q400	2	LOI	-
Ethiopian Airlines	DHC-8-Q400	5	Firm order (prev. unidentified order)	-
PAL Express	DHC-8-Q400	7	Converted options from Dec 2016	-
SpiceJet	DHC-8-Q400	25	LOI	-
SpiceJet	DHC-8-Q400		Options LOI	25

EMBRAER				
Customer	Model	No. Ordered	Order Status	Options
Belavia	E175 E1	1	Firm	-
Belavia	E195 E1	1	Firm	-
Fuji Dream Airlines	E175 E1	3	Firm	3
Japan Airlines (J-Air)	E190 E1	1	Firm	-
KLM cityhopper	E190 E1	2	Firm	-
Undisclosed customer (2)	E190-E2	20	LOI	10
Undisclosed customer (3)	E195-E2	10	Firm	10

## About IBA

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