

# Aircraft Engines

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October 2009

## Engine delivery numbers are ahead of last year.

With two thirds of the year gone it is looking increasingly likely that the engine manufacturers will have some sort of delivery record this year. Whether it is a new all-time record or a record for the decade remains to be seen.

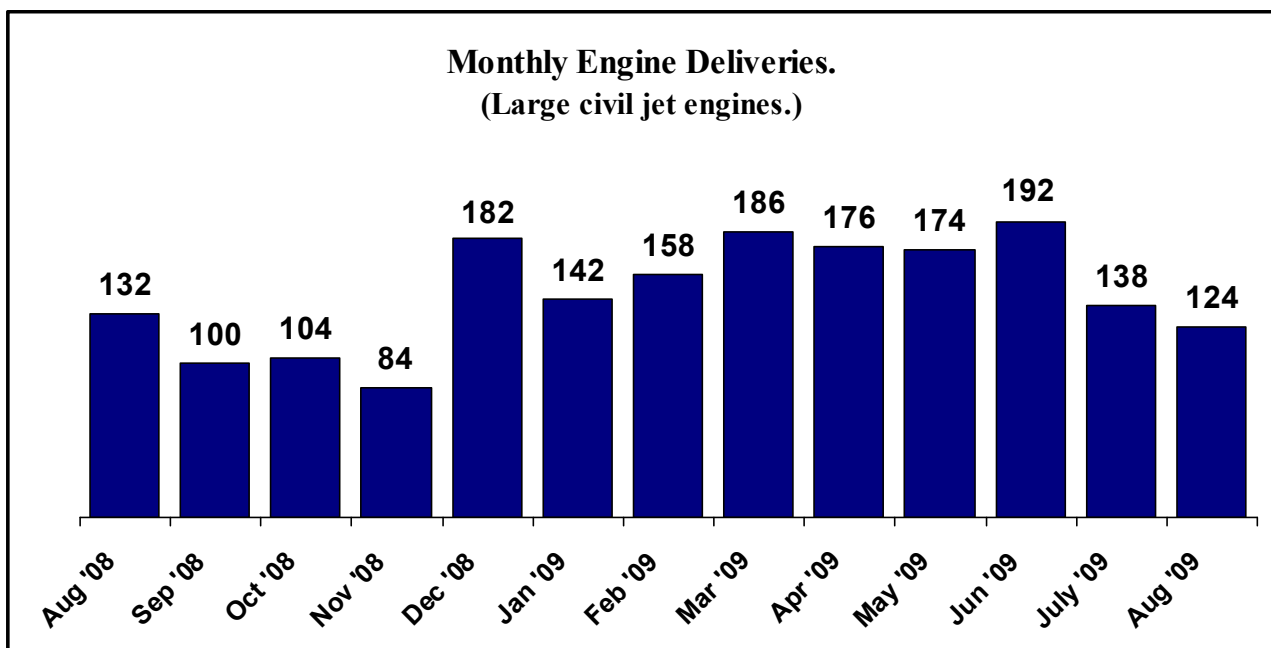
So far this year a total of 1,290 large civil jet engines have been delivered for installation on new aircraft. It is an impressive enough number and the interesting thing is that it is 12 more engines than were delivered in the same eight-month period last year. This is not a great deal but, there again, engine deliveries last year were affected by the strike at Boeing. The manufacturers delivered a total of 1,794 engines for installation on new aircraft last year. Interestingly enough, there has been one less aircraft delivery so far this year than in the same eight-month period last year.

To equal the 2008 total requires a total of 504 engine deliveries in the last four months of this year. Considering that 192 engines were delivered in June, this should not be very difficult. To equal the 2007 total of 1,844 deliveries requires a little more effort,

but not a great deal more. Deliveries have slowed in the last two months, as expected. They always go down in July and August before increasing again in September. But even taking the slowing into account, the average monthly rate of engine deliveries this year has been 161. If that rate were to be maintained for the last four months of the year it would take the total number of engine deliveries to about 1,930, which in turn is more than in 2007.

Last year was actually meant to be a record year with engine deliveries exceeding the all-time high set back in 1999. The strike prevented that from happening. Delivery numbers will increase again from September onwards. This is where it gets interesting. If demand for new aircraft in the remaining third of the year is such that the average number of monthly engine deliveries is just over 168 (lower than the number in the four months to the end of June this year), then this year will see a new, all-time record.

At a time when the industry has seen the worst downturn in history, that would really be something.



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## The Engine Manufacturers : News.

### **Recent news announcements from the Engine Manufacturers :**

#### **Research Grants for the GE Walter M601.**

September 10. The Czech Government has awarded research grants valued at about \$4 million (70 million CZK) to GE Aviation Czech s.r.o. The grants will assist GE Aviation Czech in incorporating advanced technologies into its existing Walter M601 series engines to reshape the landscape of turboprop aviation. These research grants, awarded through the Czech Republic's Ministry of Industry and Trade, are the first grants ever received by GE Aviation from the Czech Government.

Since its launch in 1975, the M601 turboprop engine family has amassed 17 million flight-hours on more than 30 aircraft types. GE Aviation Czech, in cooperation with the Czech Aeronautical Research and Test Institute, will use the grants to incorporate sophisticated technologies into a new derivative of the M601 engine.

The new engine, the H80, will feature modern 3D aerodynamic design, advanced materials and new features, such as an axial compressor blisk, to reduce weight and parts count while significantly enhancing engine performance.

The H80 engine will deliver more shaft-horsepower, improved fuel efficiency and increased temperature margin, significantly enhancing hot-day takeoff performance and high-altitude cruise speeds. The H80 engine will also feature an extended overhaul interval of 3,600 flight-hours and 6,600 cycles.

The development work is being performed under GE Aviation Czech's aircraft engine Design Organization Approval authority issued by the European Aviation Safety Agency (EASA). EASA type certification is expected in early 2010, followed by certification by the FAA.

All H80 models will be produced at GE Aviation Czech's production and test facility in Prague.

#### **P&WC's Lethbridge plant delivers 10,000<sup>th</sup> engine.**

September 21. Pratt & Whitney Canada's Lethbridge, Alberta assembly plant has celebrated the delivery of its 10,000th engine, a PT6A, to Air Tractor, Inc. The actual engine was a PT6A-60AG produced for Air Tractor's AT-602 aircraft.

Benoit Beaudoin, vice president, Operations, P&WC said at the time that this was a great milestone for the Lethbridge facility, which has been assembling PT6 engines for more than 15 years.

Air Tractor makes agricultural aircraft, or crop sprayers, and has done so for over 30 years.

The Lethbridge facility officially opened its doors in May 1993. Today, it is P&WC's Centre of Excellence for low and high power PT6 engines which are used on over 100 different aircraft models, including business, commuter, utility and trainer aircraft.

In July, a Regional Service Centre was opened in Lethbridge to offer a wide range of world-class engine maintenance and support services for P&WC engine customers. The centre performs light and heavy maintenance on PT6, JT15D, PW100 and PW500 engine series, as well as light maintenance for the PW600 engine series.

#### **GE's Middle River Aircraft Systems and Safran's Aircelle form Nexcelle joint venture.**

September 21. Nexcelle is the name chosen for the joint venture company created by GE's Middle River Aircraft Systems (MRAS) and the Safran group's Aircelle company to develop engine nacelles for next-generation integrated propulsion systems.

GE say that this identity, along with its stylized logo of two converging swirls, underscores the joint venture's cutting-edge approach to designing, manufacturing and supporting nacelles for new aircraft propulsion systems that will be more operationally efficient, cost-effective and aerodynamically optimised. Nexcelle will develop complete nacelles and nacelle subsystems for CFM International engines in applications on both new and existing aircraft.

#### **AVIC and Nexcelle announce plans for a Chinese nacelle joint venture.**

September 23. A MOU signed by AVIC Aircraft Corporation and Aircelle/MRAS/Nexcelle creates the framework for a new joint venture that will design and manufacture engine nacelle and components for a full range of aircraft applications.

This MOU, which was signed in Beijing during Aviation Expo China 2009, marks the first step in establishing a long-term alliance focused on engine nacelle technology and the production of nacelle and components to be used on both new and existing aircraft.

AVIC Aircraft and Nexcelle will consider a broad range of nacelle and components manufacturing and design opportunities, including current production programs and as well as new aircraft programs. Categories could range from business jets to large airliners.

The joint venture will be a 50/50 shared company, and is backed by the resources of Nexcelle's two parent companies, Aircelle and Middle River Aircraft Systems, as well as their parent companies GE Aviation and Safran Group.

#### **Rolls-Royce signs RR300 distribution agreement with AAR.**

September 23. Rolls-Royce has signed an exclusive distribution agreement with AAR, expanding the global reach for aftermarket supply of RR300 parts and services.

Ken Roberts, President of the Rolls-Royce Helicopter Engine business says that with the turn-key solution AAR will provide, RR300 operators will have 24/7 access to parts and services critical for their day to day operations.

The engine, launched in 2007, has been selected by Robinson Helicopter Company to power the R66 five-seater helicopter and by Rotorway International to power the RotorWay Eagle 300T turbine twin-seat helicopter. It is one of six new civil engine programs Rolls-Royce has launched in three years. Key attributes of the RR300 include: low acquisition and operating costs; low-weight, compact design; improved specific fuel consumption; an embedded engine monitoring system; and ability to burn a variety of available jet fuels.

#### **MTU Maintenance renews MRO agreement for CF34 engines.**

September 23. MTU Maintenance Berlin-Brandenburg has renewed a license agreement with GE Aviation for the maintenance, repair and overhaul of the CF34-3, -8 and -10 engine versions long before the contract period expired. The agreement, originally signed in 2002 for a term of ten years, is now set to run until 2022.

Over the life of the agreement, MTU expects the deal to generate sales worth more than 500 million euros.

According to the contract, MTU Maintenance Berlin-Brandenburg has the right to solicit orders for its services from customers located all over the world. The CF34's market is estimated at over 4,500 units, the engine being among the best-selling in its class. Every year, more than 100 engines are expected to visit the shop in Ludwigsfelde.

#### **Chinese ARJ21 powered by the CF34 now in flight test program.**

September 23. Flight tests continue for China's first domestically developed regional jet aircraft, powered by CF34-10A engines.

Two ARJ21 aircraft, developed by the Commercial Aircraft Corporation of China, (COMAC), have been flying in the flight test program that began late last year. The aircraft have completed a combined 25 flights and logged more than 45 flight hours. Later this year, a third aircraft will begin flight tests, and next year a fourth flight test aircraft will start flying in support of aircraft certification and entry into service that is scheduled for 2010.

GE Aviation provides the complete propulsion system for the ARJ21, including two fuselage-mounted CF34-10A engines. Engine certification testing on the CF34-10A is nearing completion with the fan blade out test scheduled for later this year. GE Aviation plans to submit certification reports to the FAA by the end of this year.

COMAC has taken orders for more than 200 ARJ21 aircraft and estimates a potential for 850 aircraft to be built over the next 20 years. The 70-to-90-passenger ARJ21 aircraft is designed for Chinese and export markets.

#### **El Al signs fleet management program extension.**

September 24. El Al has signed a five year extension agreement for a Pratt & Whitney Fleet Management Program for service on PW4060 engines powering its Boeing 767s and 747-400s. The agreement includes management and overhaul of the engines with an option to extend the contract up to five additional years. The estimated value of the deal is about \$70 million.

### **Martinair signs 10-year maintenance agreement for PW4000s.**

September 24. Martinair has selected P&W for a 10-year exclusive maintenance service agreement. Under the agreement, Pratt & Whitney Global Service Partners will provide maintenance services for Martinair's fleet of PW4056, PW4060 and PW4462 engines. Martinair, based in Amsterdam, operates passenger and cargo services to over 50 destinations around the world.

### **MTU Maintenance Hanover wins Air New Zealand maintenance contract.**

September 25. MTU Maintenance Hanover has recently succeeded in winning engine maintenance business worth a total of some 50 million euros. The contract with the biggest single order volume was awarded by Air New Zealand which will be sending 38 CF6-80C2 powering its 747-400s to MTU's Langenhagen-based affiliate for maintenance, repair and overhaul. The contract follows an agreement signed in 2006. MTU Maintenance Hanover is an affiliate of MTU Aero Engines and the centrepiece of the MTU Maintenance group. The company supports engines in the medium and upper thrust ranges for commercial applications, among them the CF6-50 and CF6-80C, the PW2000, IAE's V2500, and the CFM56-7.

### **Motorflug Baden-Baden becomes P&WC maintenance facility.**

September 29. Pratt & Whitney Canada Customer Service Centre Europe GmbH, a joint-venture between Pratt & Whitney Canada and MTU Aero Engines, has appointed Motorflug Baden-Baden GmbH as a Recognized Maintenance Facility (RMF) to provide maintenance support for PT6T and PW200 series engines.

With facilities in Rheinmuenster, Baden-Baden and Schoenhagen, Motorflug has been in business for over 50 years and is one of the largest helicopter repair stations in Europe, serving more than 400 customers in 40 countries. Besides helicopter airframe, engine and components maintenance, it also offers a wide range of additional services, from flight training to spare parts sales, historical records monitoring, and mobile service teams. It also holds EASA Part 145 certification for fixed-wing aircraft maintenance and avionics services.

### **P&WC to reduce workforce by 250.**

September 30. Pratt & Whitney Canada will reduce its global workforce by approximately 250 employees by the end of this year to align with a projected decline in customer demand and weakness in the global aerospace market with no signs of a recovery in 2010. The company will also close its facility on Auvergne Street in Longueuil, Quebec, by the end of 2010. The plant's activities will be transferred to other P&WC facilities on Montreal's South Shore. This closure will result in an additional workforce reduction of 160 employees across P&WC's Quebec operations, starting in early 2010.

P&WC will consolidate its activities into three key strategic manufacturing and aftermarket facilities in Quebec. These include its headquarters, manufacturing, and research & development facility in Longueuil; its service centre in St. Hubert; and its Mirabel Aerospace Centre, the future home of Pratt & Whitney's global flight test operations and final assembly and test of PW1524G engines for the Bombardier CSeries and the PW800 engine family.

### **Marshall Aerospace completes risk reduction flight trials for A400M TP400 engine.**

September 30. Marshall Aerospace has carried out the final phase of flight test trials for the Europrop International TP400 Power-plant developed for the new Airbus A400M transporter.

Marshall Aerospace was contracted by Airbus Military to evaluate the performance, stability and operability of the new power-plant and to date it has been ground run 42 times and flown 18 times on the company's highly modified C-130K flight test bed based at Cambridge UK, totalling over 110 hours of actual engine running time including about 54 flight test hours.

Commenting on the test program, Marshall Aerospace pointed out that the TP400 engine produces more thrust at idle than the standard C-130 T56 power-plant does at take-off power; with over twice the power and twice the weight of the standard C-130 engines, this has led to some unique handling qualities to the aircraft when considering the diverse range of testing required.

### **Azul signs 15-year MRO agreement with GE.**

October 1. Azul Linhas Aéreas Brasileiras S.A., has signed a 15-year agreement covering the maintenance, repair and overhaul of CF34-10E engines that power its 36 firm orders and four leased Embraer 190/195 aircraft. The agreement is valued at nearly \$1 billion over the life of the agreement. The work will be performed at the GE Celma facility in Petropolis, Brazil. Azul has orders for 76 jets from the Embraer 190 family, made up of 36 firm orders, 20 options and 20 purchase rights.

## Industry Overview :

### Aircraft backlog at a new 20-month low.

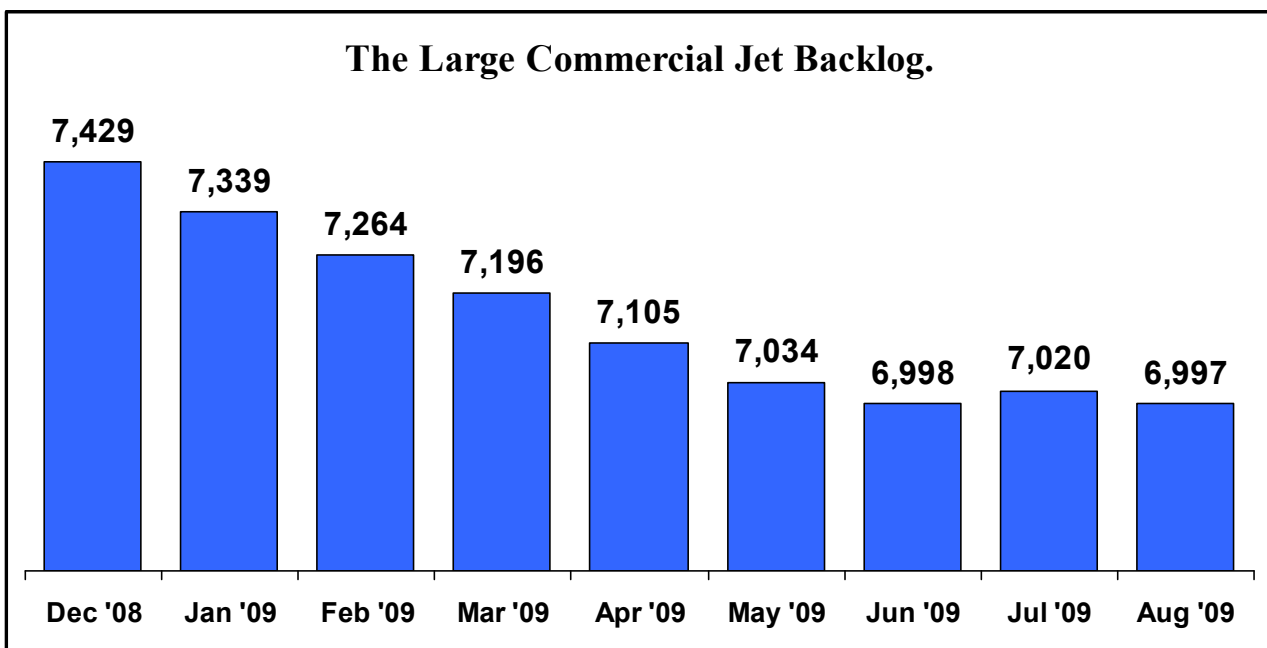
	Airbus	Boeing	Total
Backlog at the start of 2009	3,715	3,714	7,429
Gross Orders so far this year	147	161	308
Order Cancellations	22	91	113
Net Orders in 2009	125	70	195
Deliveries so far this year	320	307	627
Backlog on August 31, 2009	3,520	3,477	6,997
Backlog change this year	-195	-237	-432

After the small improvement in July, the large commercial jet backlog came down again in August and by the end of the month was lower than it had been at any point since December 2007. The figure at the end of June this year was, at the time, the lowest but the August figure is lower still. We are only talking about one aircraft here but the fact of the matter is that the August backlog is the lowest for 20 months. Since the start of this year, the backlog has dropped by 432 aircraft. In the last 12 months, it has dropped by 513 aircraft. In that time, Boeing's backlog has fallen by 219 aircraft. The Airbus backlog has fallen 294 aircraft.

There has been some slowing of the decline in recent months but that has largely been due to a higher order intake offsetting lower delivery numbers. In the three months to the end of August, for example, there were orders for 211 new jets and a total of 221 deliveries. In the three months to the end of May there were orders for 69 new aircraft and deliveries of 259. Also, cancellations have slowed - there were just two in August taking the total so far this year to 113.

The order intake is still very low and the total so far this year, at 308, is less than the total ordered in some single months less than two years ago. Deliveries of new aircraft, on the other hand, have been particularly strong. Both Airbus and Boeing still expect to each deliver around 480 new jets this year. Airbus say they expect to have two record years, back to back, which could be taken to mean that they expect a new record this year. Boeing, of course, doesn't have the machinists' strike this year and intends to deliver the same number of new aircraft - give or take a few on either side of that - as there should have been last year. That means it will be a record year for Boeing as well. It is a curious situation to be in considering the state of the airlines and the rather sorry state of the global economy. Commercial aerospace may well turn out to be one of the few industries that has done well despite the economic downturn. It has certainly done well so far, in production and output terms.

In the case of the order intake of course it is a slightly different matter. The current level is reminiscent of the position in the early 1990's. There were orders for 452 new jet aircraft in 1995, the year orders recovered. There were fewer orders in 1993 and 1994. This year might turn out to be just as bad.

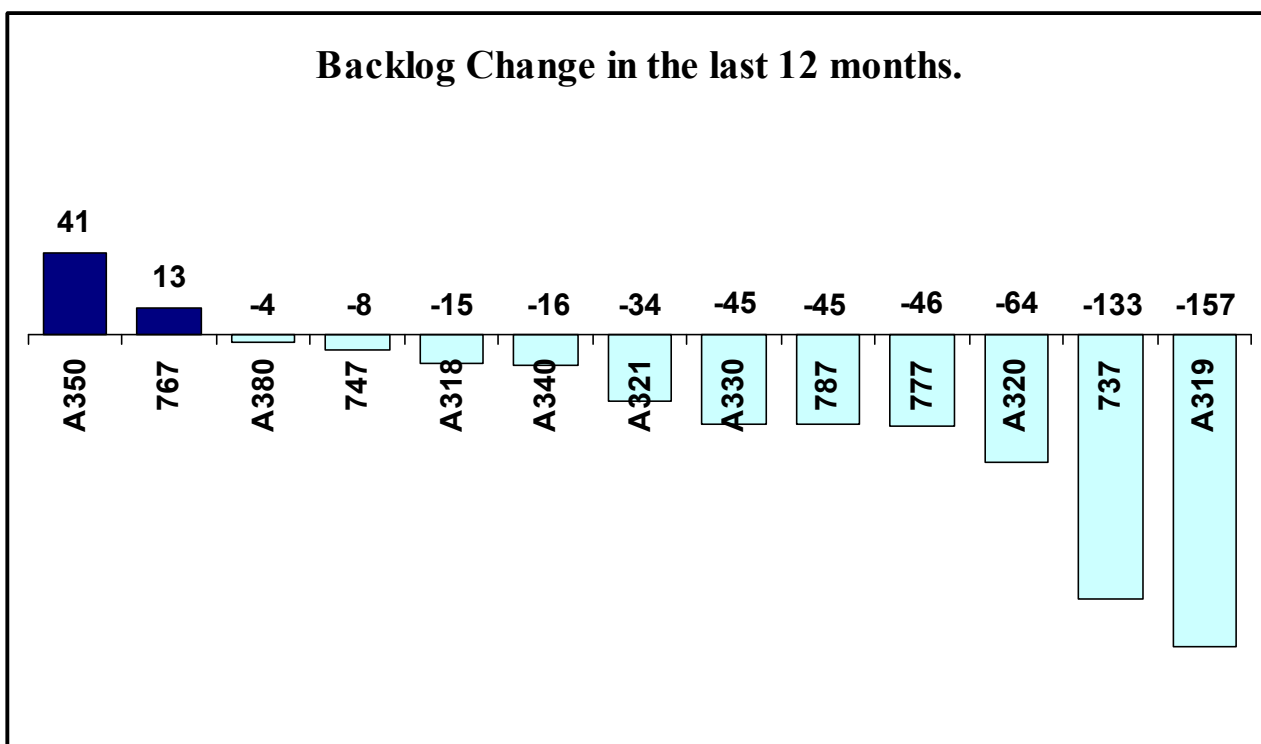


There have been orders this year, of course. It is just that there have not been very many. This scarcity coupled with cancellations and, more importantly, the high delivery rate is rapidly eating away at both the overall large commercial jet backlog and the backlogs of each of the individual programs. The table and chart below show what has happened to backlogs since the start of the year and over the past 12 months. One of the most striking differences is that only the 767 and A350 currently have higher backlogs than a year ago, and only the A350 has a higher backlog than at the start of this year.

**Backlog Change since the start of this year.**

	<b>Backlog Change since the start of 2009</b>
A318	-6
A319	-68
A320	-54
A321	-37
A330	-29
A340	-8
A350	10
A380	-3
<b>Airbus</b>	<b>-195</b>
737	-119
747	-7
767	-11
777	-40
787	-60
<b>Boeing</b>	<b>-237</b>
<b>Total Backlog</b>	<b>-432</b>

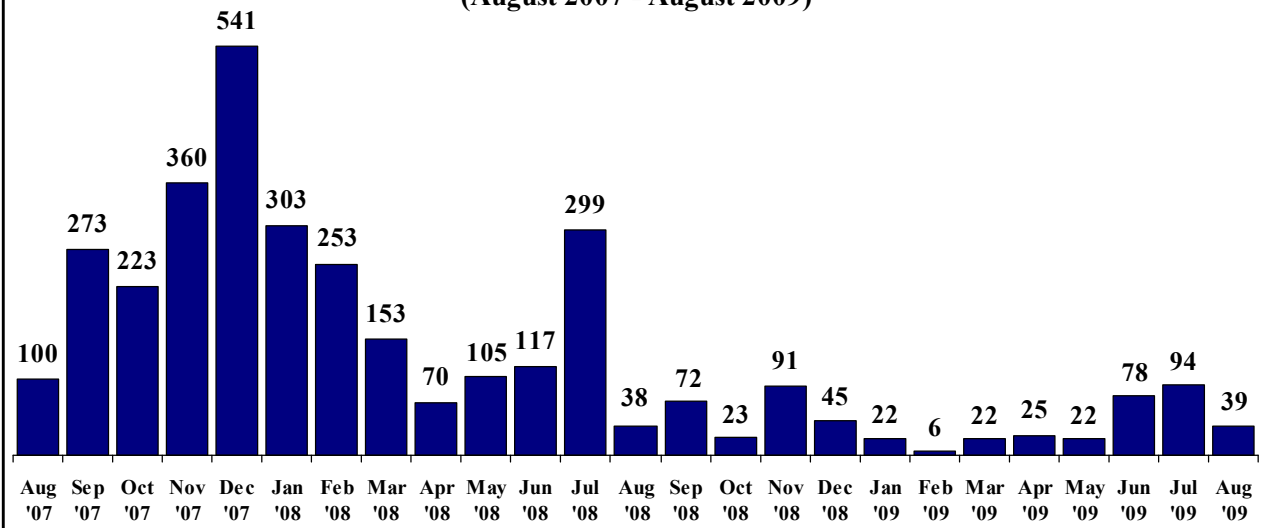
**Backlog Change in the last 12 months.**



**Backlog change in the last 12 months :** The A319 emerges as the program with the greatest backlog fall over the past year though much of the decline can be attributed to the Skybus bankruptcy which took 65 aircraft off the books in one go. Most of the decline of the 737, A320 and 777 programs is attributable to high delivery rates. As if to emphasise how difficult the market has been, only two programs have higher backlog order books than they had a year ago.

## Monthly Orders for Large Commercial Jets.

(August 2007 - August 2009)



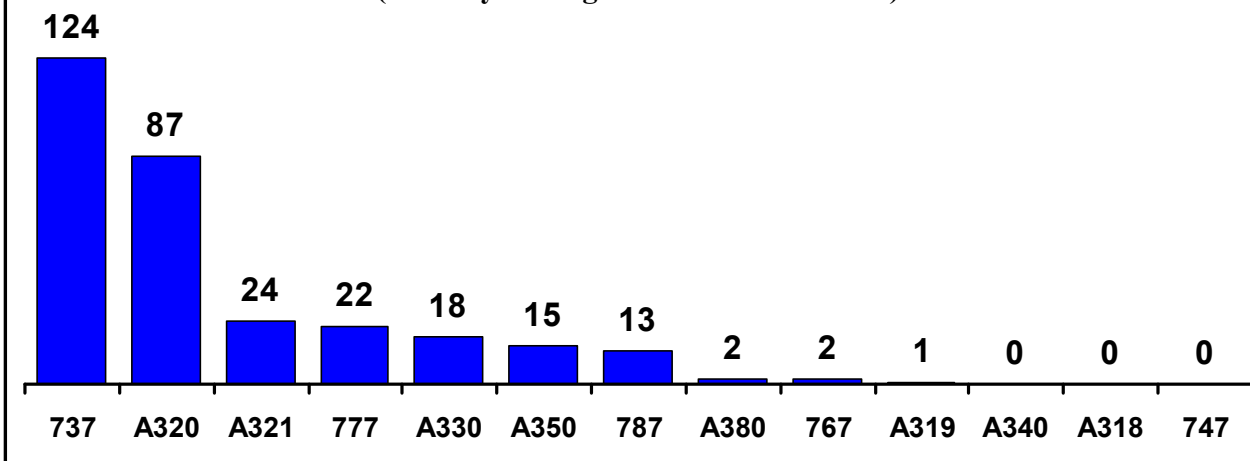
The monthly order intake today is very different to the situation just over a year ago, as the chart (above) shows. Two thirds of all orders in the last eight months have come in the last three months and this is probably not indicative of any kind of recent improvement in demand. What we are seeing now is orders for aircraft from just two or three programs each month. In June there were orders from seven programs and those mostly came at the Paris air show - as everyone knows, an airshow invariably produces order announcements. However, in July there were orders for the 737 (there are always orders for the 737), the A320 and the 777. In August there were orders for the 737 and the A330. That is all.

What is either odd or else a stark reminder of how severe the downturn has been is the fact that three programs have had no orders at all this year and another three have had two or fewer aircraft ordered. Another aspect to this is that five programs still had negative net order figures at the end of August which is two thirds of the way through the year. The current net order position is +195. At the end of August last year the net order figure was six times the current size.

Some things, however, do not change much: The 737 and A320 have taken the bulk of orders so far this year with a combined total of 211. That works out to just over two thirds of the total order intake which is not particularly unusual for these programs. The big difference this year though is that five programs, including the A350 and 787, have had 24 or fewer orders this year (see the chart below) and the A350 and 787 are at the bottom end of that scale with a combined total of 28 ordered aircraft. A year ago, at the end of August 2008, these two programs taken together had eight times as many orders.

## The Order Intake so far this year.

(January to August 2009 : Total = 308)



### Orders and Cancellations - the Net Order position.

Aircraft	Ordered so far this year	Cancelled this year	Net Order Position
737	124	6	118
747	0	1	-1
767	2	5	-3
777	22	6	16
787	13	73	-60
A318	0	3	-3
A319	1	3	-2
A320	87	5	82
A321	24	4	20
A330	18	1	17
A340	0	1	-1
A350	15	5	10
A380	2	0	2
<b>Total</b>	<b>308</b>	<b>113</b>	<b>195</b>

By now, both suppliers and manufacturers are probably rather used to the low monthly order intake and the fact that the backlog continues to decline. Actually, an interesting point in this context is that backlog decline is really rather relative. The backlog at the end of August may have been 513 below the level of August 2008, which is quite a drop (6.8%) but it is still 1,179 aircraft more than at the end of August 2007. This means that currently it is still 20 percent larger than it was two years ago. If it was 20 percent lower, the manufacturers would have started to cut production rates by now.

Suppliers to the industry are probably far more interested in production right now than they are in orders and the overall backlog. Everyone knows that the monthly order intake is low and will probably remain low for the rest of the year, if not longer. Everyone also knows that the backlog has been slowly declining for the past year, though it did grow at a faster rate in the 12 months to the end of August last year than it has declined since. It is a far larger backlog now than in the last downturn. This is an interesting point in itself; the current backlog represents over seven years of work in hand but in 2004, at the bottom of the last downturn, it was worth less than four years of work.

It is production that interests and concerns people now and there are two elements to this. The first is the current production rate. The second is production next year. So far this year Airbus has delivered 320 aircraft which is five more than in the first eight months of last year. Boeing has delivered a total of 307 new aircraft, or six fewer than in the first eight months of last year. In other words, the total to the end of August this year is one less than in the same period last year.

There has been a far larger seasonal decline in delivery numbers this year than last year. Deliveries tend to peak in June and fall off sharply in July and August before improving again in September. Last year the drop between June and the end of August was 25 aircraft. This time it was 34 aircraft. July had been the worst month of the year for deliveries but the August figure of 60 was lower still. To some extent it is a surprisingly large fall coming so soon after the record numbers of deliveries in June. Oddly, both manufacturers had the same June to August fall. Airbus had 49 deliveries in June and 17 fewer in August. Boeing had 45 deliveries in June, and 17 fewer in August.

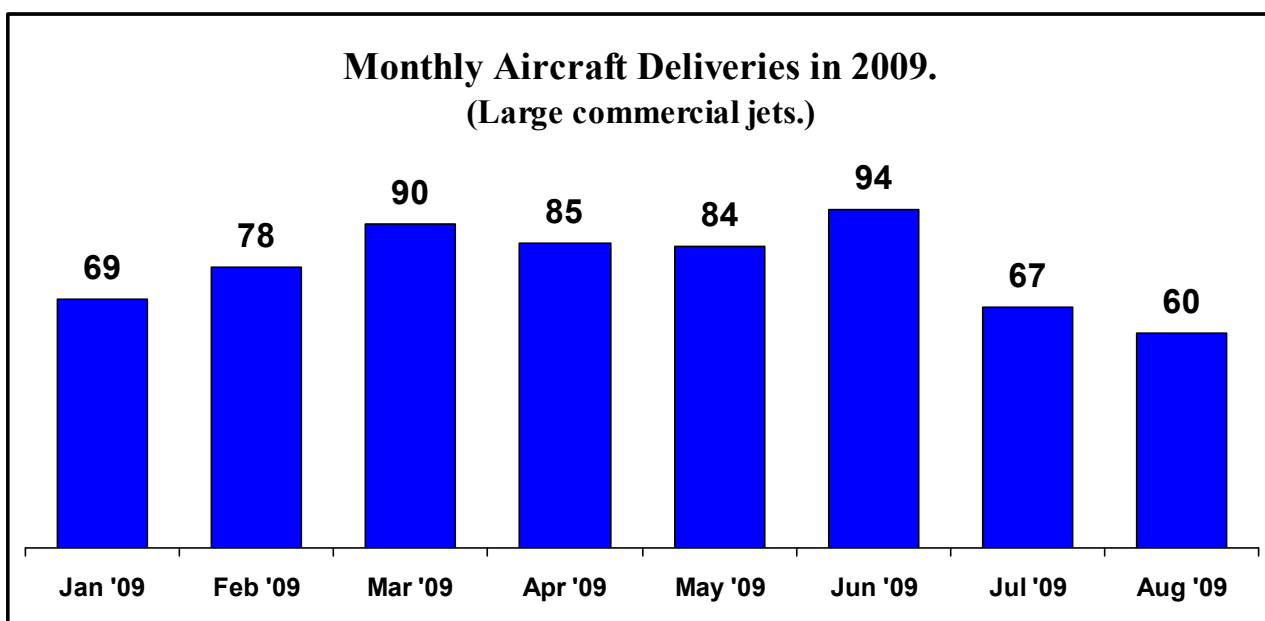
### Large Commercial Jet Deliveries this year.

	Deliveries in the First Half 2009	Deliveries (Jan - Aug 2009)
A318	2	3
A319	52	60
A320	113	144
A321	41	55
A330	38	46
A340	5	7
A380	3	5
737	190	237
747	6	6
767	6	8
777	44	56
<b>Total</b>	<b>500</b>	<b>627</b>

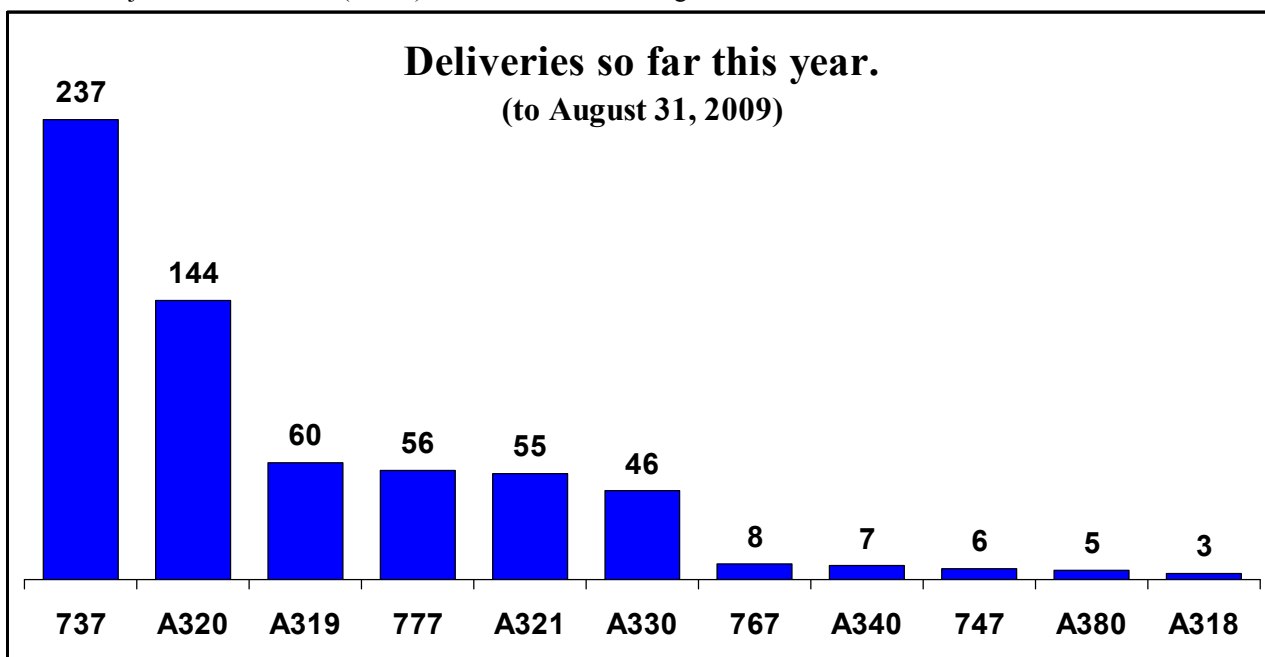
This drop has affected both manufacturers' monthly averages for deliveries. However, there is some spare capacity around, surprising though it may seem. Both Boeing and Airbus want to deliver about 480 new jet aircraft each this year - neither has given an exact number but we are looking at this as a target figure. For Boeing to reach that target, the company will have to have an average of 43 deliveries each month for the rest of the year (i.e. for the next four months). To reach their target, Airbus will need to have a monthly average of 40 deliveries for the rest of the year. Interestingly, for Airbus this involves no change. The company's average rate this year has been 40 per month anyway despite the July and August figures bringing that average down. The rate in the three months to the end of June was 46 per month.

Boeing's average rate this year has been 38.4 per month but, again, the July and August figures have brought that average down. The rate for the three months to the end of June was 41.6 per month and reaching the target figure this year requires only a notional increase beyond that.

Airbus must deliver 160 new jets in the last four months of this year and Boeing must deliver 173. It is not particularly important if one or the other falls short of the 460 figure because it will still be a record year. Last year, Boeing had the strike which reduced the total number of large commercial jet deliveries. This year there isn't a strike. Boeing will deliver about the same number of new aircraft that the company would have delivered last year had there not been a strike.



**Deliveries :** Monthly deliveries (above) saw a larger decline between the end of June and the end of August this year than last year. Both manufacturers had 17 fewer deliveries in August than in June. There have been 627 large commercial jet deliveries so far (below) with the 737 accounting for well over one third of the total.



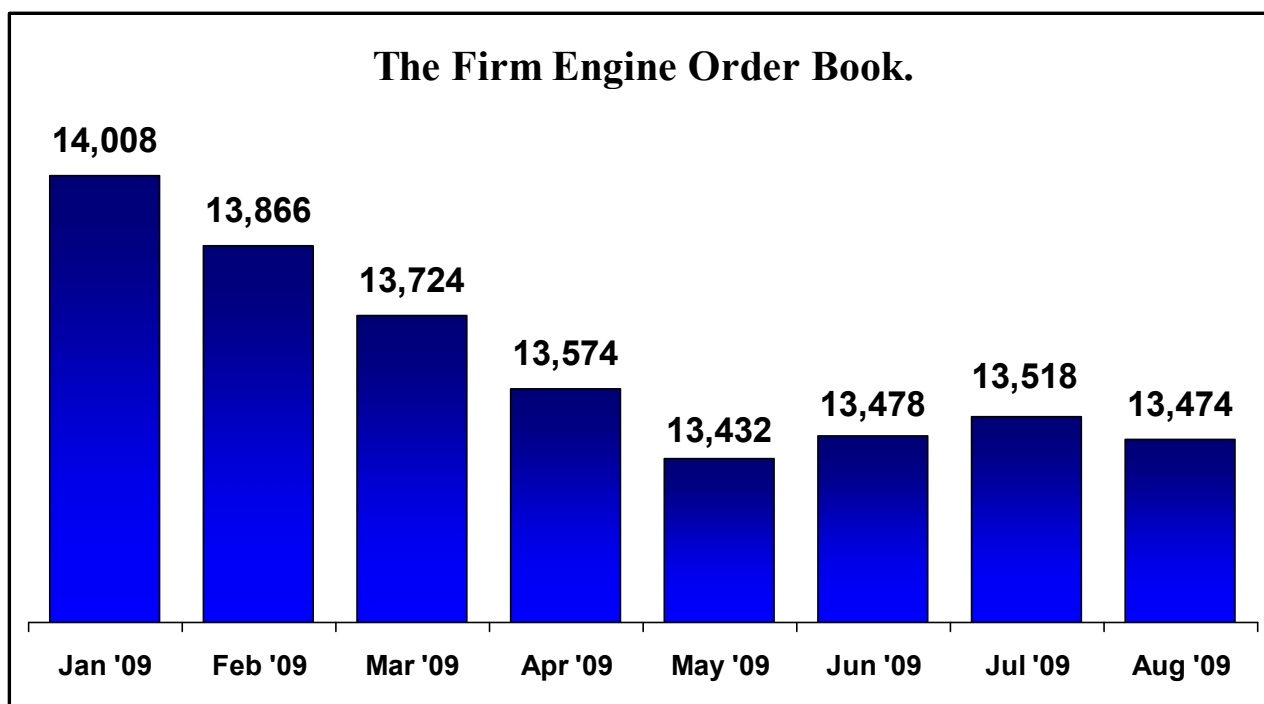
Record delivery numbers this year are all very well. Suppliers are already asking about what might happen next year and in 2011. The manufacturers have said very little about 2010 delivery numbers though there is the feeling that the downturn has bottomed out and that there could well be some improvement in the global economy in the not too distant future. The thinking is that the worst of the downturn may be over. While this does not translate into increased demand for new jet aircraft just yet, it does mean that there is a good chance that production rates will not necessarily dip across the board. In any event, some rates are increasing. The A380, for example, is expected to deliver 20 aircraft next year. The 737-800 will probably deliver around 230 aircraft next year, which is an increase on the projected figure for this year, but deliveries of the 737-700 may be down. The A330-300 will deliver about 40 aircraft this year, much more than last year, and the figure could rise to about 48 next year. However, deliveries of the A330-200 may come down in 2010 though what we will start to see are first deliveries of the new A330-200F.

The industry is already aware that 777 deliveries will come down from seven each month to five each month from June next year. The 767 rate will stay the same at one per month. One big difference is that if the last 747-400F is delivered this year, there will be no 747 deliveries in the first half of next year. First deliveries of the 747-8F start in the Third Quarter.

Deliveries of the A340 have been scaled back to one per month and while deliveries of the A320 family will be 34 per month from October this year, that still works out at over 400 aircraft and the A320 program itself will account for a significant slice of that.

What this all adds up to is not very much change from the present. Some programs like the 747 and A340 will deliver far fewer aircraft but others, in particular the very popular single-aisle programs, could deliver more than this year.

If the manufacturers do decide to bring production rates down, they will probably start with the big twin-aisle programs before anything happens to the single-aisles. What is most unlikely is an overall rate reduction of as much as one third as some analysts have suggested. The manufacturers would need to have much smaller order books to protect before going to those lengths.



**The Firm Engine Order Book :** Prior to August the low-point for the aircraft backlog was in June. For the engine order book however, the low was actually one month before and the number of engines on firm order had been increasing since May. While there was a further drop in August, the month-end figure was still 42 engines above the total at the end of May. Meanwhile, the aircraft backlog at the end of August reached a new 20-month low.

*Philip G. Abbott, Editor.*

## The Engine Order Book :

### Engine production still heading for a record year.

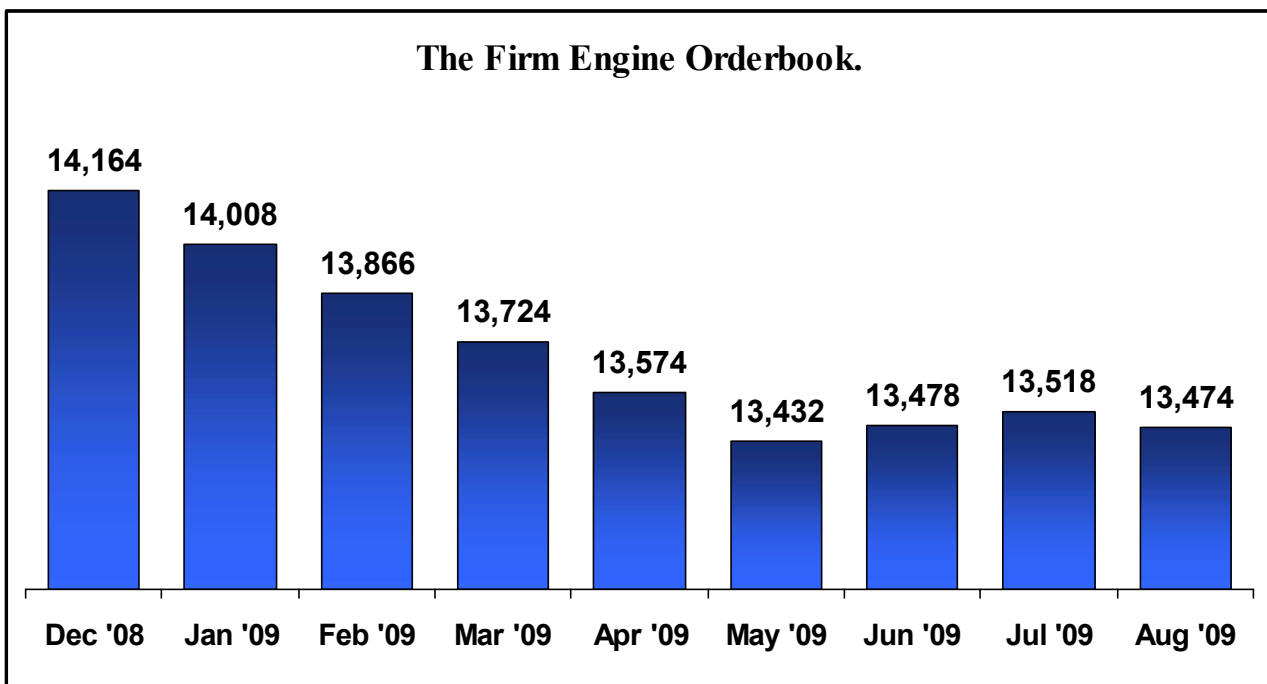
It is really quite interesting to note that the engine manufacturers are looking at a record year in terms of deliveries. Where this has got really interesting is that not only might this year be the best in the last ten years, it could very well be the all-time high which, considering the severity of the downturn, is really rather remarkable. With two thirds of the year gone though, a record of some sort is a very real possibility.

So far this year a total of 1,290 new large civil jet engines have been delivered. That is more than the total in both 2003 and 2004, and after just eight months. To be fair, 2003 and 2004 were the really bad years. The total so far is 12 engines more than in the first eight months of last year which is not really very much, until you consider that there was the small matter of the strike at Boeing last year - after August - which reduced the total number of new engine deliveries for the whole year by about 220. Last year, the engine manufacturers delivered 1,794 new large civil jet engines for installation on new aircraft. The year before, it was 1,844 engines. Last year should have been a record year with nearly 2,000 engine deliveries but the strike stopped that.

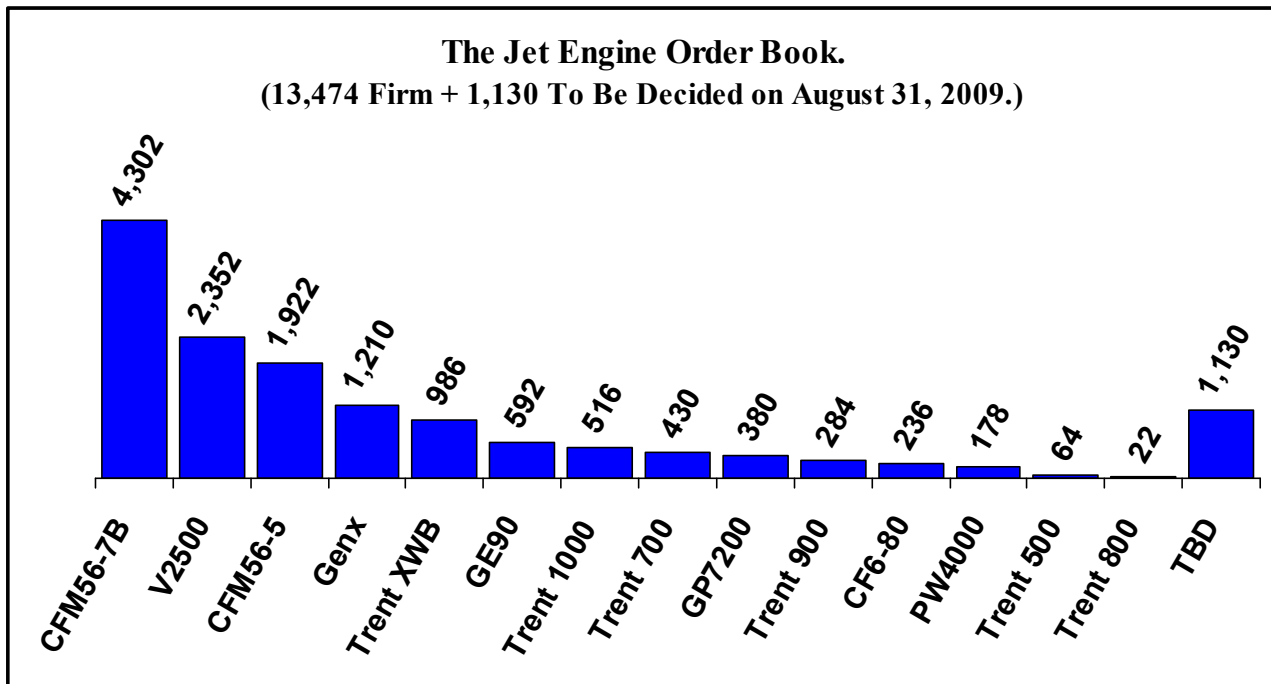
Monthly deliveries have slowed but, even so, the average monthly figure this year has been 161. If that rate holds firm for the remaining four months of this year, there should be about 1,930 deliveries this year. That figure beats the 2007 figure by quite a long way but it is 34 engines short of equalling the all-time record set back in 1999. The slowing of engine deliveries in July and August was expected - delivery numbers always go down in those months - and the numbers should improve from September onwards. Whether they improve enough to beat the record set 10 years ago remains to be seen. What is needed is a monthly average of 169 engine deliveries over the next four months, or two fewer per month than the average rate for the first half of this year.

Of course, record delivery numbers at a time when the order intake is so low means that the firm engine order book figure will be much lower at the end of this year than it was at the start. The August figure of 13,474 is 250 below the level at the end of March and 690 engines fewer than at the start of the year. It is also 878 fewer than at the end of August last year. The two CFM programs have both lost over 230 engines from their firm order books since the start of the year and, in fact, all but three programs have lower order books. The GP7200 is the only in-service engine program to have a higher firm order book than at the start of the year.

So far this year orders have been placed for a total of 576 large jet engines and the August order intake of 78 was the third best for a single month this year. While there might be a new production record this year, there may also be a new "worst year" record for orders.



**The Firm Engine Order Book :** After the improvement in June and July, the firm order book dropped back in August to the second lowest monthly level this year. The total is just over 200 more engines on firm order than was the case at the end of December 2007. The cause of this drop can simply be attributed to deliveries outstripping the order intake, despite the fact that deliveries drop in July and August each year anyway.



**The Jet Engine Order Book :** During August only the CFM56-7B and the Trent 700 programs had new orders which helped maintain order book levels though there were no Trent 700 deliveries either. The three largest engine programs, taken together, account for nearly 8,600 engines on firm order, or 64% of the total. What is interesting in this context is that the three largest programs have together lost 524 engines from their firm order books since the start of the year. At the other end of the scale, the number of To Be Decided (TBD) engines has been falling over the past year but still accounted for nearly eight percent of the total engine requirement at the end of August. At the start of the year, that share was 8.6%.

**The Jet Engine Order Book.**

	Firm Orders Dec. 31 2007	Firm Orders Mar 31 2008	Firm Orders Jun 30 2008	Firm Orders Sep 30 2008	Firm Orders Dec 31 2008	Firm Orders Mar 31 2009	Firm Orders Jun 30 2009	Firm Orders Aug 31 2009
CF6-80	270	242	242	256	282	262	244	236
CFM56-5	2,362	2,384	2,324	2,456	2,170	2,072	1,974	1,922
CFM56-7B	4,152	4,350	4,486	4,584	4,540	4,406	4,274	4,302
GE90	676	684	668	680	664	628	598	592
GErx	1,170	1,126	1,130	1,146	1,176	1,178	1,210	1,210
GP7200	340	352	352	348	336	344	380	380
PW4000	212	192	182	212	204	200	184	178
PW6000	60	32	16	10	6	0	0	0
RB211	4	4	4	0	0	0	0	0
Trent 500	152	148	124	100	96	88	72	64
Trent 700	284	414	448	470	462	442	418	430
Trent 800	22	22	30	30	30	28	24	22
Trent 900	348	340	332	284	300	300	292	284
Trent 1000	470	528	528	538	542	512	516	516
Trent XWB	462	742	758	916	966	966	986	986
V2500	2,284	2,328	2,250	2,324	2,390	2,298	2,306	2,352
<b>Firm Orders</b>	<b>13,268</b>	<b>13,888</b>	<b>13,874</b>	<b>14,354</b>	<b>14,164</b>	<b>13,724</b>	<b>13,478</b>	<b>13,474</b>
TBD	1,136	1,400	1,450	1,364	1,340	1,306	1,136	1,130
<b>Firm + TBD</b>	<b>14,404</b>	<b>15,288</b>	<b>15,324</b>	<b>15,718</b>	<b>15,504</b>	<b>15,030</b>	<b>14,614</b>	<b>14,604</b>

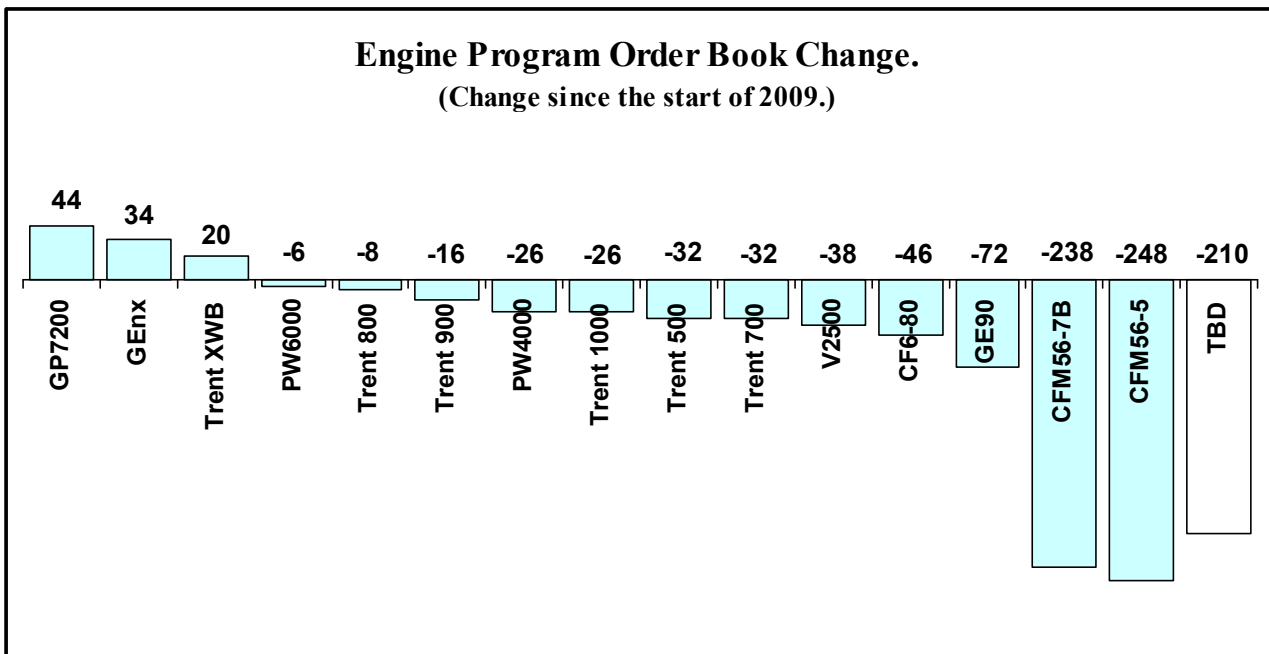
TBD = To Be Decided. No engine choice has yet been made for some firm-ordered aircraft.

### Engine Order Book Change.

	Change in the last 12 months.	Change since the start of 2009.	Change since the end of Q1.	Change since the end of Q2.
CF6-80	10	-46	-26	-8
CFM56-5	-520	-248	-150	-52
CFM56-7B	-266	-238	-104	28
GE90	-72	-72	-36	-6
GEnx	68	34	32	0
GP7200	32	44	36	0
PW4000	-26	-26	-22	-6
PW6000	-12	-6	0	0
Trent 500	-60	-32	-24	-8
Trent 700	-44	-32	-12	12
Trent 800	-8	-8	-6	-2
Trent 900	-48	-16	-16	-8
Trent 1000	-22	-26	4	0
Trent XWB	82	20	20	0
V2500	8	-38	54	46
<b>Firm Orders</b>	<b>-878</b>	<b>-690</b>	<b>-250</b>	<b>-4</b>
To Be Decided	-204	-210	-176	-6
<b>TER (Firm + TBD)</b>	<b>-1,082</b>	<b>-900</b>	<b>-426</b>	<b>-10</b>

Change in the last 12 months is the change since August 31, 2008.

TBD = To Be Decided. TER = Total Engine Requirement.



**Order Book Change since the start of 2009 :** Up to the end of July the CFM56-7B had the largest firm order book drop of any engine program. During August, however, CFM56-5 deliveries further reduced that program's firm order book figure to the extent that by the end of the month it showed a greater drop than the sister program. While cancellations have had some impact on the firm order books of individual programs, deliveries coupled with few orders have eroded the order book levels of other programs. Some engine programs have still not had any orders at all this year.

### Customer Order Book Changes in the Last Month : July to August.

Customer	Aircraft	Engine choice	Engines on order July 31, 2009	Engines on order August 31, 2009	Change
Aerdragon Aviation	A320	TBD	20	18	-2
Afriqiyah Airlines	A319	CFM56-5B	2	0	-2
Afriqiyah Airlines	A330-200	CF6-80E1	6	4	-2
Air Berlin	A320	CFM56-5B4	48	44	-4
Air Berlin	A321	CFM56-5B	0	2	2
Air China	A330-200	Trent 700	40	34	-6
Air China	A330-300	Trent 700	0	6	6
Air India	777-200LR	GE90-115B	2	0	-2
Air India	777-300ER	GE90-115B	18	14	-4
AirAsia	A320	CFM56-5B4	228	226	-2
Airbus Exec Jets	A330-200	CF6-80E1	44	42	-2
Alafco	A320	CFM56-5B4	38	34	-4
American Airlines	737-800	CFM56-7B	166	160	-6
Avianca	A320	CFM56-5B	56	50	-6
BOC Aviation	737-700	CFM56-7B	22	20	-2
BOC Aviation	737-800	CFM56-7B	36	34	-2
BOC Aviation	A319	CFM56-5B	4	2	-2
British Airways	A318	CFM56-5B	4	2	-2
China Eastern Airlines	737-700	CFM56-7B	16	14	-2
China Eastern Airlines	737-800	CFM56-7B	10	8	-2
China Southern	737-700	CFM56-7B	54	52	-2
China Southern	A319	CFM56-5B	8	6	-2
China Southern	A320	CFM56-5B	44	40	-4
CIT Leasing Corp.	737-700	CFM56-7B	30	28	-2
CIT Leasing Corp.	737-800	CFM56-7B	0	2	2
Continental Airlines	737-700	CFM56-7B	64	56	-8
Continental Airlines	737-800	CFM56-7B	18	22	4
Continental Airlines	777-200ER	GE90-115B	14	10	-4
DHL International	767-300F	CF6-80C2B7F	12	10	-2
EasyJet	A320	CFM56-5B	28	22	-6
Egyptair	737-800	CFM56-7B	26	24	-2
Emirates	777-300ER	GE90-115B	52	50	-2
Etihad Airways	A340-600	Trent 500	8	4	-4
GOL Airlines	737-800	CFM56-7B	176	174	-2
Hainan Airlines	737-800	CFM56-7B	26	24	-2
Indian Airlines	A319	CFM56-5B	12	10	-2
Indian Airlines	A321	CFM56-5B	14	10	-4
IndiGo	A320	V2527-A5	88	86	-2
KLM	777-300ER	GE90-115B	6	4	-2
Korean Air	777-300ER	GE90-115B	20	18	-2
Lion Air	737-900ER	CFM56-7B	316	314	-2
Lufthansa	A321	V2530-A5	50	46	-4
Norwegian Air Shuttle	737-800	CFM56-7B	84	82	-2
Pegasus Airlines	737-800	CFM56-7B	14	12	-2
Qantas	A380	Trent 900	68	64	-4
Shandong Airlines	737-800	CFM56-7B	6	4	-2
Shenzhen Airlines	A320	V2527-A5	66	64	-2
Shenzhen Airlines	737-800	CFM56-7B	4	2	-2
Sichuan Airlines	A319	V2524-A5	6	4	-2
Southwest	737-700	CFM56-7B	184	182	-2
Swiss International	A330-300	PW4000	16	14	-2
TAM	A319	V2524-A5	18	16	-2
Tiger Airways	A320	V2527-A5	112	110	-2
TUI	737-700	CFM56-7B	28	12	-16
TUI	737-800	CFM56-7B	32	48	16
Turkish Airlines	A330-300	Trent 700	0	14	14
Turkmenistan Airlines	737-700	CFM56-7B	0	4	4
Unidentified	737-700	CFM56-7B	52	66	14
Unidentified	737-800	CFM56-7B	502	518	16
Unidentified	767-300ER	CF6-80C2	18	22	4
Unidentified	767-300ER	TBD	4	0	-4
US Airways	A319	V2524-A5	18	16	-2
US Airways	A320	V2527-A5	102	104	2
WestJet	737-700	CFM56-7B	48	76	28
Xiamen Airlines	737-800	CFM56-7B	82	80	-2
<b>Change</b>					<b>-50</b>

## The Total Engine Requirement (TER):

The Total Engine Requirement is the total number of engines required for all large commercial jets on backlog order. It is not the same thing as the Firm Engine Order Book simply because there are firm-ordered aircraft which don't have an engine choice. At the end of August there were 549 aircraft on backlog without an engine choice and this translates into a requirement of 1,130 engines, on top of the firm order book figure.

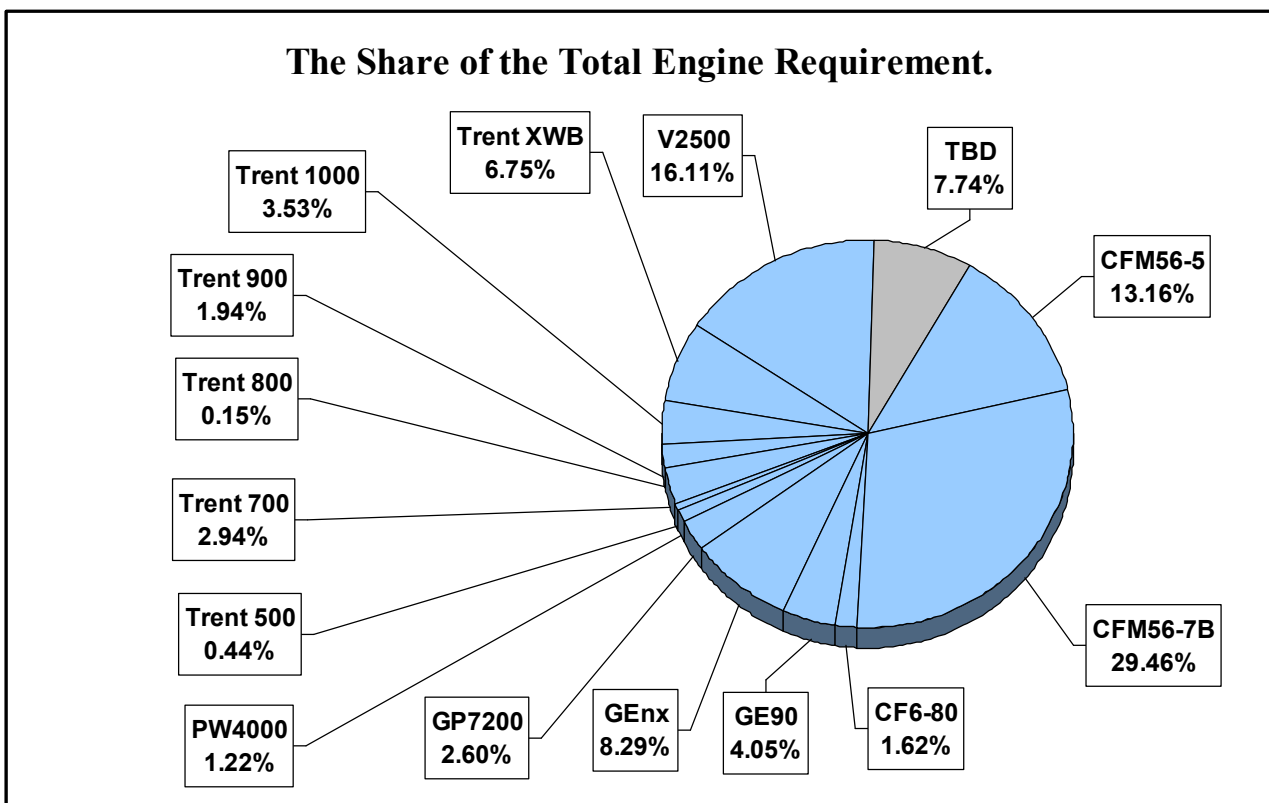
As the table on the previous page shows, the TER figure has dropped by just 10 engines since the end of June. In that period the number of engines on firm order has dropped by four and the number of TBDs has fallen by six.

Since the start of this year the TER figure has dropped by exactly 900 engines. The jet aircraft backlog has dropped by 432 in that time. Over the last 12 months however, the TER figure has gone down by 1,082 engines (the firm order book has dropped 878 engines in that time) as a direct consequence of the falling aircraft backlog. In fact, the aircraft backlog at the end of August this year was 513 fewer than at the end of August last year.

When looking at the share of the market held by the various engine programs, one does have to take into account the fact that the 787, A320 Family, A330 and A380 programs all have firm orders without engine choices. For example, there are nearly 300 A320s on firm order without engine choices and these aircraft will ultimately have either CFM56-5 or V2500 engines. Similarly there are 197 787s without engine choices and these will either have the GEnx or Trent 1000s. There are 40 A330s and 16 A380s without engine choices.

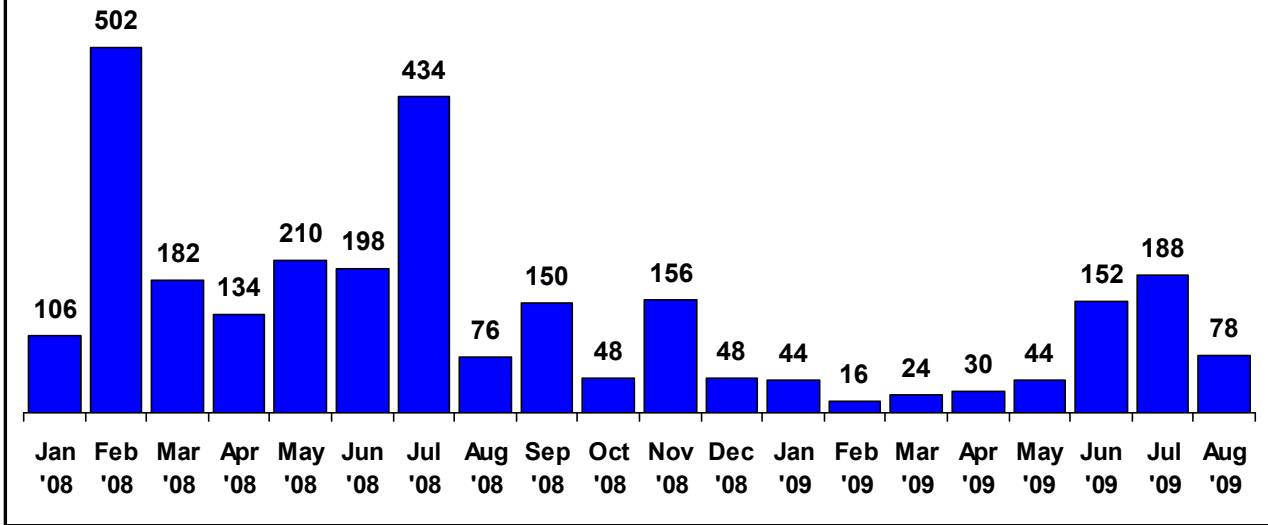
The CFM56-7B has the largest share of the TER, as the chart below shows. The V2500 has the second largest share, the CFM56-5 has the third and so on. Expressed as a share of the firm order book, excluding the 1,130 TBDs, the CFM56-7 has a 31.9% share and the V2500 has a 17.5% share. It is a case of slightly larger shares all round.

As the large commercial jet backlog falls, so too does the TER figure. It peaked in July last year at 15,750 engines (of which 14,410 were firm). The current level is 1,146 engines below the peak figure, a drop of 7.2%.



**Share of the Total Engine Requirement on August 31, 2009 :** The total engine requirement for all firm ordered large commercial jets was 14,604 engines at the end of August and this includes 1,130 To Be Decided (TBD) engines; those destined for aircraft for which there has been no engine selection.

### Monthly Firm Order Intake - Large Civil Jet Engines.



**Monthly order intake :** August was the third best month for engine orders this year and the fifth best month in the last 12. So far this year there have been firm orders for 576 engines with roughly three quarters of them ordered in the last three months. While the June and July order intake this year was well below the intake in the same months last year, the August figure this year was, in fact, greater than the figure for August last year.

### Monthly Engine Orders (Large Commercial Jet Engines).

Engine Model	Aug '08	Sep '08	Oct '08	Nov '08	Dec '08	Jan '09	Feb '09	Mar '09	Apr '09	May '09	Jun '09	Jul '09	Aug '09
CF6-80	4	36	8	8	2				2		2		
CFM56-5		46	8	26	20					2	14		
CFM56-7B	64	36	20	4	10	36	2	10	8	28	36	64	64
GE90	8	8			4		6	2	10	2		24	
GE9x		4		4									
GP7200							8						
PW4000			8					12					
Trent 500		8	4		12								
Trent 700			8							2			14
Trent 800													
Trent 900				24									
Trent 1000										10			
Trent XWB		12		50					10		20		
V2500				40		8					80	100	
<b>Firm Orders</b>	<b>76</b>	<b>150</b>	<b>48</b>	<b>156</b>	<b>48</b>	<b>44</b>	<b>16</b>	<b>24</b>	<b>30</b>	<b>44</b>	<b>152</b>	<b>188</b>	<b>78</b>
TBD	0	0	0	40	48	0	0	20	20	0	4	0	0
<b>Orders + TBD</b>	<b>76</b>	<b>150</b>	<b>48</b>	<b>196</b>	<b>96</b>	<b>44</b>	<b>16</b>	<b>44</b>	<b>50</b>	<b>44</b>	<b>156</b>	<b>188</b>	<b>78</b>

TBD = To Be Decided. These are engines for firm ordered aircraft which do not have an engine choice.

## Engine Variants on order.

Engine variant	On Order June 30 2007	On Order Sep 30 2007	On Order Dec 31 2007	On Order Mar 31 2008	On Order June 30 2008	On Order Sep 30 2008	On Order Dec 31 2008	On Order Mar 31 2009	On Order June 30 2009	On Order Aug 31 2009
CF6-80C2	196	170	148	126	104	116	116	106	98	100
CF6-80C2B6F	4	4	4	4	4	20	20	20	8	8
CF6-80C2B7F	12	12	12	12	12	12	12	12	12	10
CF6-80E1	94	94	100	94	118	106	134	124	126	118
CF6-80E1A3	10	8	6	6	4	2				
CFM56-5A	6	4	4	4	4	4	4	4	4	4
CFM56-5A4	10	10	10	10	10	10	10	10	10	10
CFM56-5B	1,286	1,358	1,414	1,396	1,372	1,608	1,372	1,298	1,228	1,184
CFM56-5B4	798	802	766	812	786	674	642	602	586	582
CFM56-5B4/P										
CFM56-5B6/P	74	86	120	112	110	116	104	122	114	112
CFM56-5B7	22	36	36	38	34	40	38	36	32	30
CFM56-5C	4	4	4	4	4	4				
CFM56-5C4/P	32	32	8	8	4					
CFM56-7B	3,260	3,592	4,152	4,350	4,486	4,584	4,540	4,406	4,274	4,302
GE90-110B1	178	184	180	178	178	172	172	160	154	152
GE90-115B	396	404	442	420	412	470	454	428	406	402
GE90-115B1	34	56	54	86	78	38	38	40	38	38
GENx-1B	648	666	754	706	706	718	748	750	786	786
GENx-1B64	6	6	4	4	4	4	4	4	4	4
GENx-2B	264	244	304	308	312	316	316	316	312	312
GENx-2B67	80	108	108	108	108	108	108	108	108	108
GP7200	108	108	108	120	120	120	120	128	168	168
GP7270	188	188	232	232	232	228	216	216	212	212
GP7277										
PW4000	66	80	130	110	108	136	78	76	72	68
PW4062A	24	24	24	24	20	16	16	4		
PW4090	10	8	4	4		8	6	6	6	6
PW4164	4	6	6	6	6	6	4	4	2	2
PW4168A	24	18								
PW4170	24	48	48	48	48	46	100	110	104	102
PW6000	68	66	60	32	16	10	6			
RB211-524G/H-T	8	4	4	4	4					
Trent 500	152	136	152	148	124	100	96	88	72	64
Trent 553										
Trent 700	252	260	276	406	442	464	456	440	418	430
Trent 772	8	8	8	8	6	6	6	2		
Trent 800	12	8	8	8	16	16	16	14	10	8
Trent 892	14	14	14	14	14	14	14	14	14	14
Trent 892B	4	4								
Trent 900	300	300	348	340	332	284	300	300	292	284
Trent 1000	366	366	470	528	528	538	542	512	516	516
Trent 1700										
Trent XWB	270	270	462	742	758	916	966	966	986	986
V2500-A5	190	256	252							
V2522-A5	46	44	46	46	46	46	46	46	46	46
V2524-A5	44	54	64	270	272	240	226	202	202	184
V2527-A5	1,194	1,222	1,686	1,704	1,650	1,752	1,790	1,746	1,738	1,818
V2530-A4	200	248	236	308	282	286	328	304	320	304
TBD	1,068	1,052	1,136	1,400	1,450	1,364	1,340	1,306	1,136	1,130
<b>Firm + TBDs</b>	<b>12,058</b>	<b>12,670</b>	<b>14,404</b>	<b>15,288</b>	<b>15,324</b>	<b>15,718</b>	<b>15,504</b>	<b>15,030</b>	<b>14,614</b>	<b>14,604</b>

TBD = To Be Decided. NOTE : Some customers only release generic information, such as CF6-80 or PW4000 and some figures given for these programs could well be other variants.

## To Be Decided :

(Firm Aircraft Orders but no Engine Choice.)

Customer	Aircraft	Engines To Be Decided on Dec 31, 2008	Engines To Be Decided on Mar 31, 2009	Engines To Be Decided on June 30, 2009	Engines To Be Decided on August 31, 2009
Unidentified	767-300ER	0	0	4	0
Aeroflot	787-8	44	44	44	44
Air Berlin	787-8	50	50	50	50
Air Niugini	787-8	0	2	2	2
Aviation Capital Grp.	787-8	10	10	10	10
Biman Bangladesh	787-8	8	8	8	8
Boeing Business Jet	787-8	6	4	4	4
CIT Leasing Corp	787-8	16	16	16	16
Dubai Aerospace Ent.	787-8	30	30	30	30
Gulf Air	787-8	32	32	48	48
ILFC	787-8	34	34	34	34
Jet Airways	787-8	20	20	20	20
Kenya Airways	787-8	18	18	18	18
LCAL	787-8	2	0	0	0
Privatair	787-8	4	4	4	4
S7 Group	787-8	30	0	0	0
Sky Peace Ltd.	787-8	2	0	0	0
Travel Service	787-8	2	2	2	2
TUI	787-8	22	22	22	22
Unidentified	787-8	48	46	4	4
VALC	787-8	16	16	16	16
Vietnam Airlines	787-8	16	16	16	16
Boeing Business Jet	787-9	4	4	4	4
Etihad Airways	787-9	70	70	0	0
ILFC	787-9	2	2	2	2
Singapore Airlines	787-9	40	40	40	40
Air Astana	A319	12	12	12	12
Atlantic Airways	A319	2	2	0	0
CIT Leasing Corp.	A319	26	26	26	26
Unidentified	A319	2	2	0	0
Aerdragon Aviation	A320	26	24	20	18
Aviation Capital Grp.	A320	26	26	26	26
CASGC	A320	224	224	236	236
DAE Capital	A320	140	140	140	140
Hong Kong Airlines	A320	60	60	60	60
Israir	A320	6	6	0	0
Unidentified	A320	70	66	50	50
Aerventure	A321	6	6	6	6
Nile Air	A321	18	18	18	18
Unidentified	A321	12	12	0	0
Afriqiyah Airlines	A330-200	6	6	0	0
Libyan Airlines	A330-200	8	8	8	8
Pegasus Aviation Fin.	A330-200	10	10	10	10
Tunis Air	A330-200	6	6	6	6
BOC Aviation	A330-200F	10	10	10	10
Intrepid Aviation	A330-200F	6	6	6	6
AerCap	A330-300	14	22	20	20
CIT Leasing	A330-300	2	2	2	2
Pegasus Aviation Fin	A330-300	2	2	2	2
Saudi Arabian Airlines	A330-300	16	16	16	16
Etihad Airways	A380	40	40	0	0
Kingfisher Airlines	A380	20	20	20	20
Qatar Airways	A380	20	20	20	20
Thai Airways Intl.	A380	24	24	24	24
<b>Total To Be Decided</b>		<b>1,340</b>	<b>1,306</b>	<b>1,136</b>	<b>1,130</b>

## Cancellations :

### Engine Orders Cancelled this year.

Engine	Customer	Aircraft	Engines Cancelled
CF6-80C2B6F	All Nippon Airways	767-300ER	10
CFM56-5B	Aerventure	A319	4
CFM56-5B	Unidentified	A320	2
CFM56-5B4	Aerventure	A320	2
CFM56-7B	AirTran	737-700	2
CFM56-7B	SkyEurope	737-700	6
CFM56-7B	Unidentified	737-700	4
GE90-110B1	LAN Airlines	777F	2
GE90-115B	Continental	777-200ER	6
GE90-115B	Egyptair	777-300ER	4
GENx-1B	Qantas	787-9	30
GENx-1B	Unidentified	787-8	4
GENx-2B	Boeing Business Jet	747-8	4
PW6000	US Airways	A318	6
Trent 1000	Boeing Business Jets	787-8	2
Trent 1000	LCAL	787-8	12
Trent 1000	LCAL	787-9	18
Trent 500	Etihad	A340-600	4
Trent 700	Aircastle	A330-200	2
Trent XWB	CIT Leasing	A350-800	10
V2524-A5	Aerventure	A319	2
V2527-A5	Aerventure	A320	6
V2530	Kingfisher Airlines	A321	8
None	LCAL	787-8	2
None	S7 Group	787-8	30
None	Unidentified	787-8	2
None	Unidentified	787-8	46
<b>Total</b>			<b>230</b>

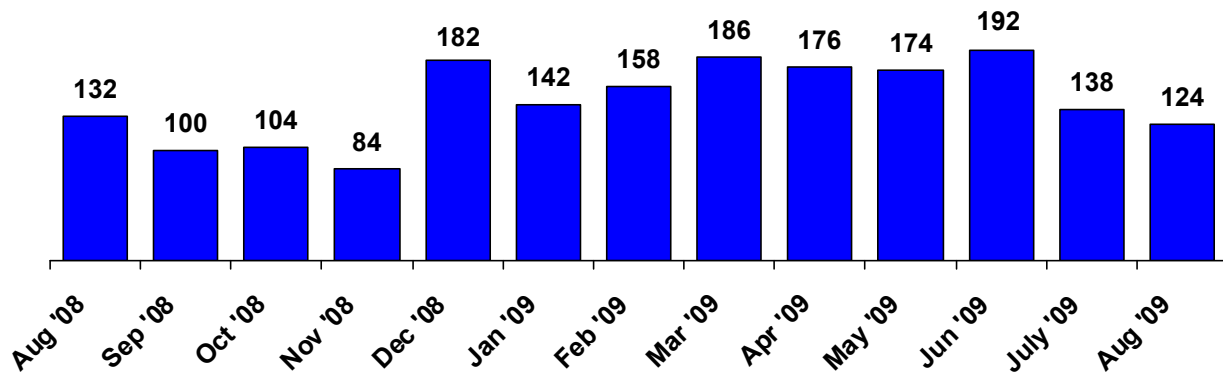
**Note :** None = No engine selection had been made at the time the aircraft order was cancelled.

## Engine Deliveries :

### Monthly Engine Deliveries.

	Aug '08	Sep '08	Oct '08	Nov '08	Dec '08	Jan '09	Feb '09	Mar '09	Apr '09	May '09	Jun '09	Jul '09	Aug '09
CF6-80	4	8		2	14	6	4	4	4	10	8	6	6
CFM56-5	22	32	40	40	36	24	40	48	36	48	42	22	40
CFM56-7B	58	20	6	2	64	50	54	78	62	62	74	52	42
GE90	10	2	4	2	14	14	16	14	12	12	14	10	12
GP7200			4	4	4				4				
PW4000	12		4	6	6	6	2	8	8		8	2	2
PW6000	2	2	2	2									
RB211													
Trent 500		4	12		4		4	4	4	4	4	4	4
Trent 700	4	4	8	8	4	4	8	6	12	12	2	4	
Trent 800								2		2	2	2	
Trent 900		8			8					4	4	4	4
V2500	20	20	24	18	28	38	30	22	34	20	34	32	14
<b>Total</b>	<b>132</b>	<b>100</b>	<b>104</b>	<b>84</b>	<b>182</b>	<b>142</b>	<b>158</b>	<b>186</b>	<b>176</b>	<b>174</b>	<b>192</b>	<b>138</b>	<b>124</b>

### Monthly Engine Deliveries. (Large civil jet engines.)



### Major Engine Program Deliveries.

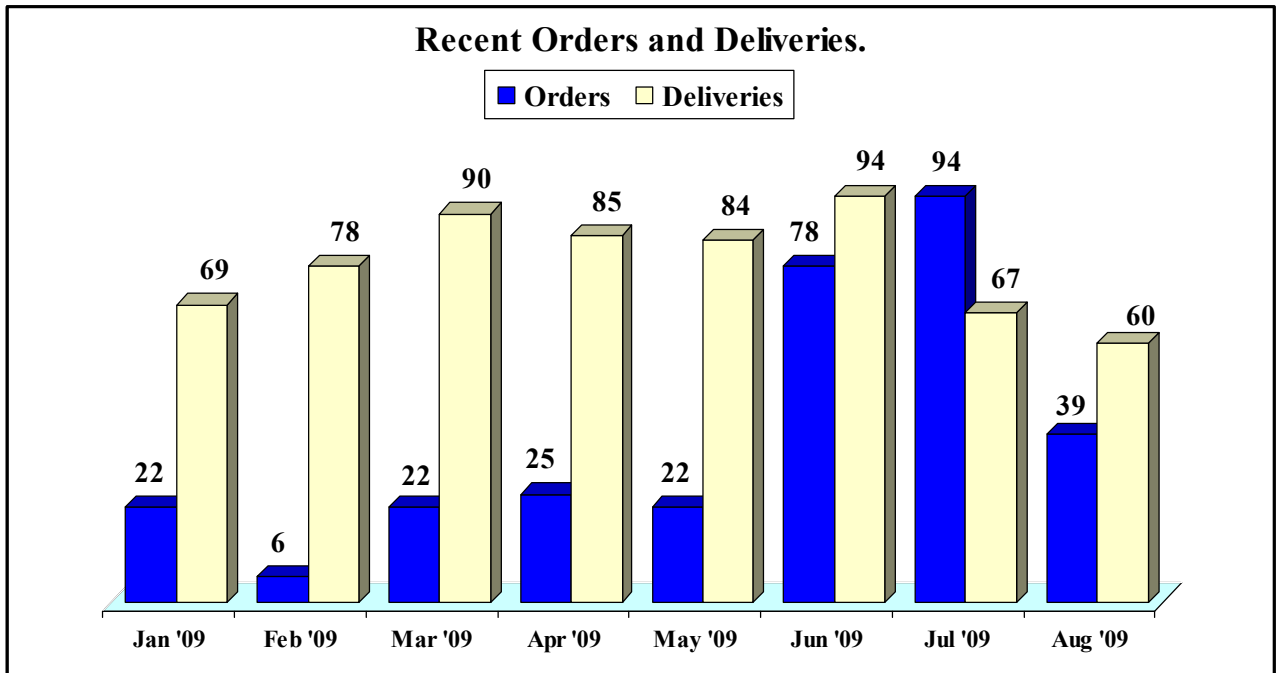
	2006 Engine Deliveries.	2007 Engine Deliveries.	2008 Engine Deliveries.	Engines delivered so far in 2009.
BR715	10			
CF6-80	108	156	112	48
CFM56-5	434	444	432	300
CFM56-7B	602	660	580	474
GE90	98	140	116	104
GP7200			16	4
PW4000	68	38	50	36
PW6000		10	20	
RB211		4	4	
Trent 500	88	36	40	28
Trent 700	56	52	60	48
Trent 800	22	12		8
Trent 900		4	32	16
V2500	252	288	332	224
<b>Total</b>	<b>1,738</b>	<b>1,844</b>	<b>1,794</b>	<b>1,290</b>

### Deliveries of Engine Variants.

Engine Model	Delivered in 2007.	Delivered in 2008.	Delivered so far in 2009.
CF6-80C2	90	62	20
CF6-80C2B6F	4	2	2
CF6-80C2B7F			2
CF6-80E1	58	38	24
CF6-80E1A3	4	10	
CFM56-5A	4		
CFM56-5B	280	274	254
CFM56-5B/3			2
CFM56-5B/P	6		
CFM56-5B4	122	98	34
CFM56-5B4/P	6	6	2
CFM56-5B6		2	
CFM56-5B6/P	18	34	4
CFM56-5B7		6	4
CFM56-5C		4	
CFM56-5C4/P	8	8	
CFM56-7B	660	580	474
GE90-110B1			18
GE90-115B	136	112	84
GE90-115B1	4	4	2
GP7270		16	4
PW4062A	2	8	16
PW4090	14	6	
PW4164	2	2	16
PW4168	4	8	
PW4168A	16	12	
PW4170		14	4
PW6000	10	20	
RB211-524H-T	4	4	
Trent 500	36	40	28
Trent 700	52	58	38
Trent 772		2	10
Trent 800	8		8
Trent 892B	4		
Trent 900	4	32	16
V2522-A5		4	6
V2524-A5	64	50	24
V2527-A5	176	210	124
V2530-A5	48	68	70
<b>Total Engines Delivered</b>	<b>1,844</b>	<b>1,794</b>	<b>1,290</b>

**Note :** The total number of engines delivered in the eight months to the end of August this year is 12 more than in the same period last year. The total so far is also 504 engines fewer than in the whole of 2008. If there is no change to the average monthly delivery rate for the rest of this year, the engine manufacturers will deliver about 140 more units than they did last year, and about 90 more than in 2007.

## Large Commercial Jet Aircraft Orders and Deliveries :



**Recent Orders and Deliveries :** After the improvement in June and July the order intake settled back in August. Only the 737 and A330 programs took orders during the month. The total August intake was comparatively low though and took the total number of gross orders for 2009 so far to 308. By way of contrast, there have been 627 deliveries this year, more than twice the order intake. Deliveries did slow in July and August but this was not unexpected. Deliveries normally slow in these months. What was something of a surprise though was that the August delivery figure was the lowest since November last year which was when Boeing was still recovering from the strike.

### Orders and Deliveries so far in 2009.

(Eight months to the end of August.)

Aircraft	Gross Orders	Deliveries
A318	0	3
A319	1	60
A320	87	144
A321	24	55
A330	18	46
A340	0	7
A350	15	
A380	2	5
<b>Total Airbus</b>	<b>147</b>	<b>320</b>
737	124	237
747	0	6
767	2	8
777	22	56
787	13	
<b>Total Boeing</b>	<b>161</b>	<b>307</b>
<b>Total</b>	<b>308</b>	<b>627</b>

**Orders and Deliveries of Large Commercial Jets.**

	<b>Aircraft Orders</b>	<b>Aircraft Deliveries</b>
September <b>2005</b>	115	37
October	113	56
November	341	61
December	628	63
January <b>2006</b>	68	51
February	77	74
March	131	74
April	158	68
May	39	71
June	147	75
July	121	64
August	52	63
September	179	74
October	334	68
November	185	80
December	401	69
January <b>2007</b>	103	63
February	64	78
March	156	80
April	160	73
May	135	78
June	606	79
July	155	71
August	100	67
September	273	70
October	223	86
November	360	72
December	541	77
January <b>2008</b>	303	71
February	253	77
March	153	90
April	70	79
May	105	79
June	117	90
July	299	77
August	38	65
September	72	46
October	23	47
November	91	50
December	45	87
January <b>2009</b>	22	69
February	6	78
March	22	90
April	25	85
May	22	84
June	78	94
July	94	67
August	39	60

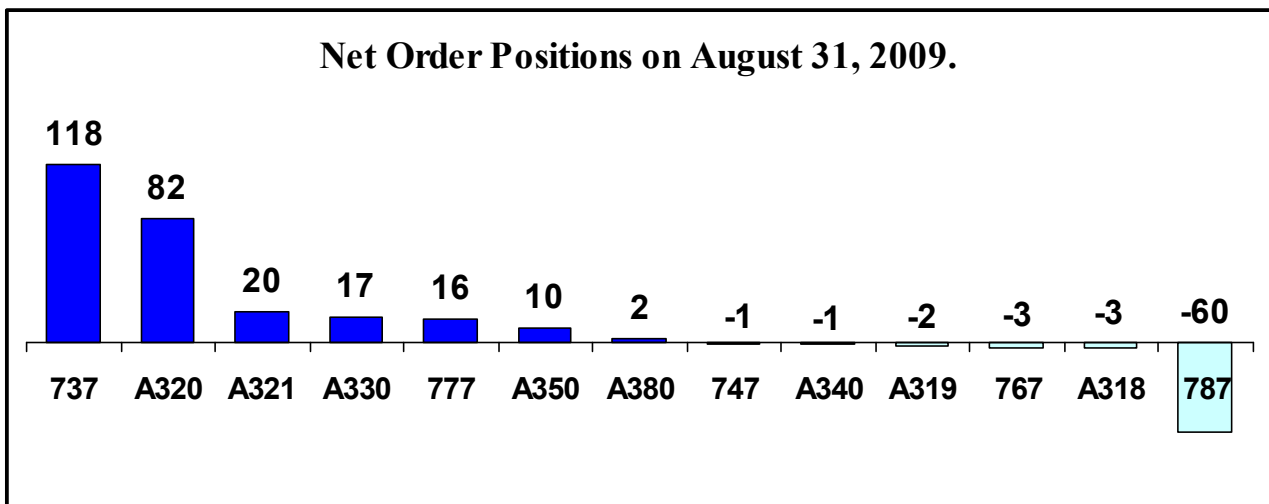
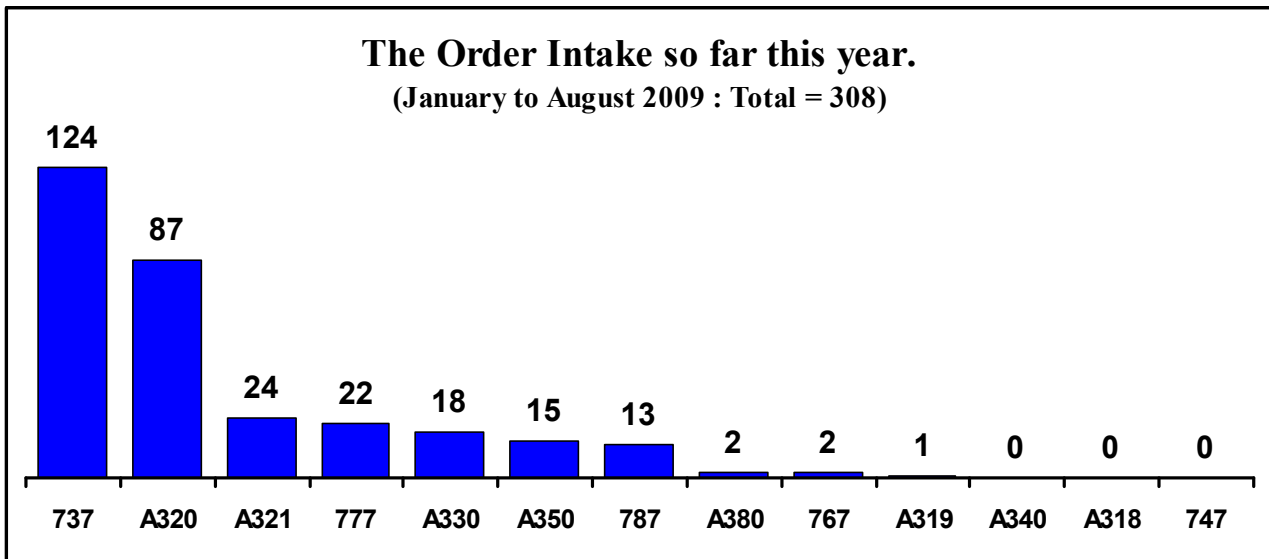
## Orders for Large Commercial Jets :

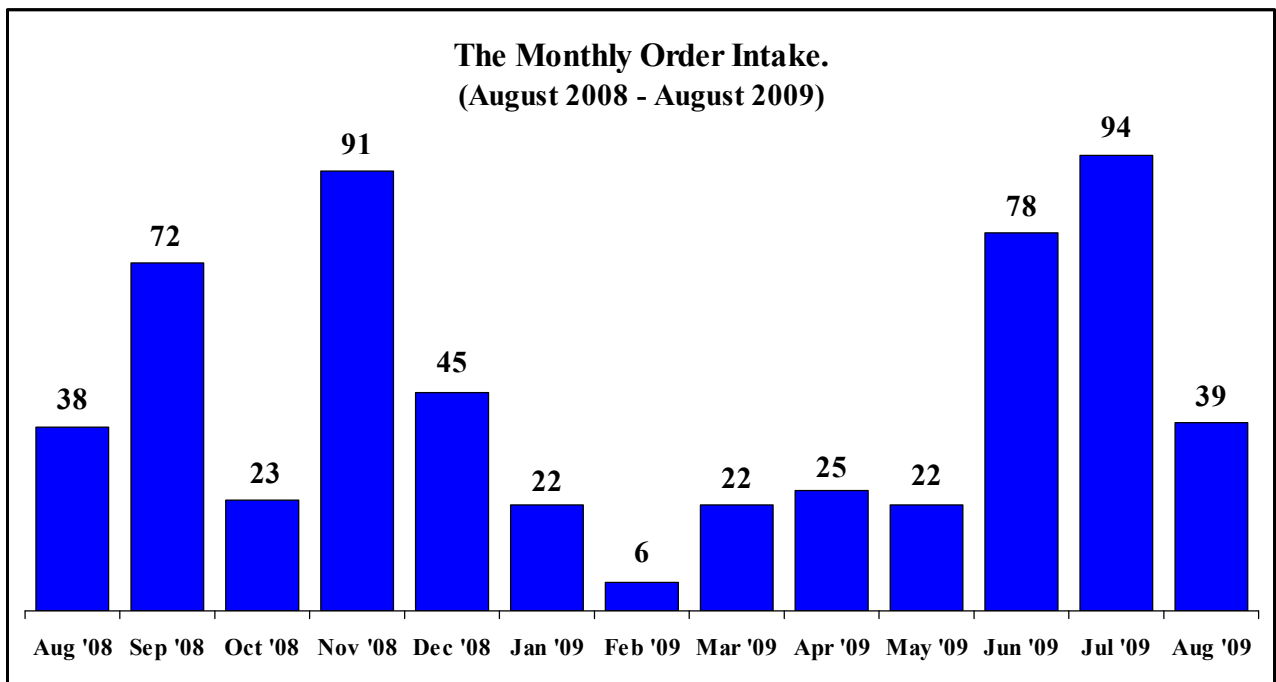
### Some programs still have negative net order figures.

So far this year orders have been placed for a total of 308 new large commercial jets. The first five months of the year were pretty abysmal in terms of the monthly order intake but the situation improved in June with orders for 78 aircraft across seven programs. In July there were orders for 94 aircraft, across three programs. The August order figure was 39 and that was across two programs.

There have been no orders for the A318 in the past year and only two 747s have been ordered in that time. Only one A319 has been ordered this year and no A340s since last December. The A380 took an order for two in February which was the last time and the last 747 order was in November last year. The 767 has had an order for two, in June, and that was the only order this year. Orders are few and far between and are likely to remain few and far between for the rest of this year. Next year might not be a whole lot better and while the manufacturers like to talk of signs of improvement, right now there are pretty few signs and there is not a lot of improvement.

Two thirds of the year is over and the net order position at the end of August was +195. Cancellations have slowed and have not reached anywhere near the huge numbers that some analysts were predicting. There have been 113 cancellations so far this year and most of those were in the early part of the year. However, the point is that it has been several years since the industry has got to the end of August with such a low net order position. Six aircraft programs (747, 767, 787, A318, A319 and A340) still have negative net order positions and it is quite possible that some of these will finish the year with negative net figures.





**Monthly Order Intake :** Orders in each of the last three months have certainly been better than in any of the previous five months and the lower figure for August is not particularly unusual. There is often a lower August figure. At least this year there was a slightly higher August order intake than last year. Once again, though, it was a case of just a few aircraft programs getting new orders. Only A330s and 737s were ordered in August.

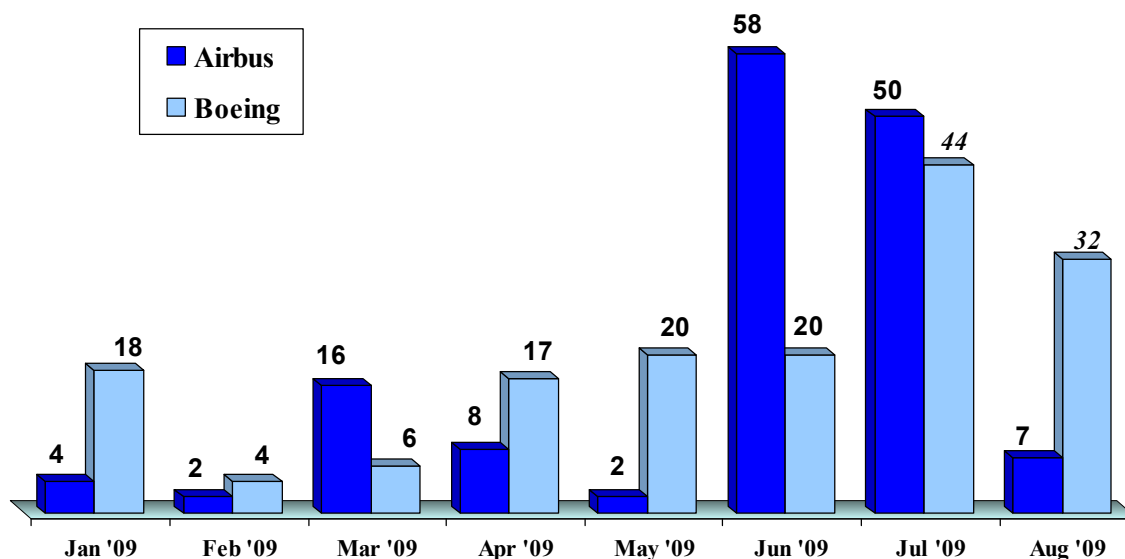
**Summary Orders by Month.**

Aircraft	Aug '08	Sep '08	Oct '08	Nov '08	Dec '08	Jan '09	Feb '09	Mar '09	Apr '09	May '09	June '09	July '09	Aug '09
A318													
A319		6	4	17							1		
A320		17		36	4			10		1	26	50	
A321					15	4					20		
A330			4					6	3	1	1		7
A340		2	1		3								
A350		6		25					5		10		
A380				6			2						
737	32	18	10	2	5	18	1	5	4	14	18	32	32
747		1		1									
767	2	18	4	4	1						2		
777	4	4			2		3	1	5	1		12	
787					15				8	5			
<b>Total</b>	<b>38</b>	<b>72</b>	<b>23</b>	<b>91</b>	<b>45</b>	<b>22</b>	<b>6</b>	<b>22</b>	<b>25</b>	<b>22</b>	<b>78</b>	<b>94</b>	<b>39</b>

**Orders for Large Commercial Jets in August 2009.**

Customer	Model	No. of Aircraft	Engine Choice
Turkmenistan Airlines	737-700	3	CFM56-7B
Unidentified	737-700	7	CFM56-7B
Unidentified	737-800	1	CFM56-7B
Unidentified	737-800	7	CFM56-7B
WestJet	737-700	14	CFM56-7B
Turkish Airlines	A330-300	7	Trent 700
<b>Total Orders in August</b>		<b>39</b>	

### Monthly Orders by Manufacturer.

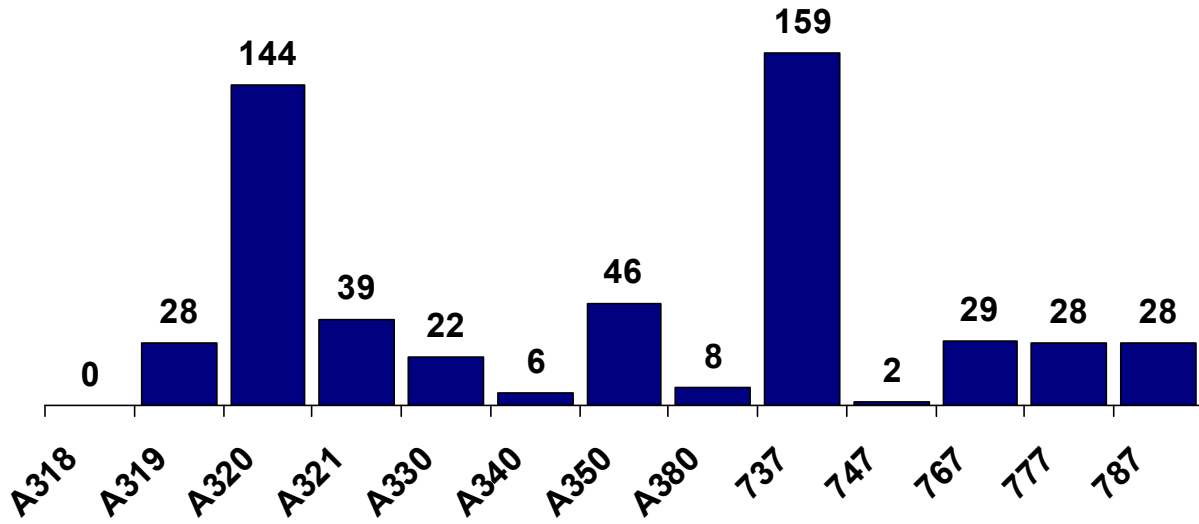


**Monthly Orders by Manufacturer :** By way of pure coincidence, both Boeing and Airbus have taken orders for 143 new jet aircraft in the last seven months. However, when it comes to the year so far, Boeing is ahead by 14 aircraft with a total of 161. While Airbus led the first half of the year, chiefly due to the June order intake, Boeing has done better in the last two months. Something that keeps Boeing numbers up is the fact that there are always new orders for the 737.

### Orders Cancelled this year.

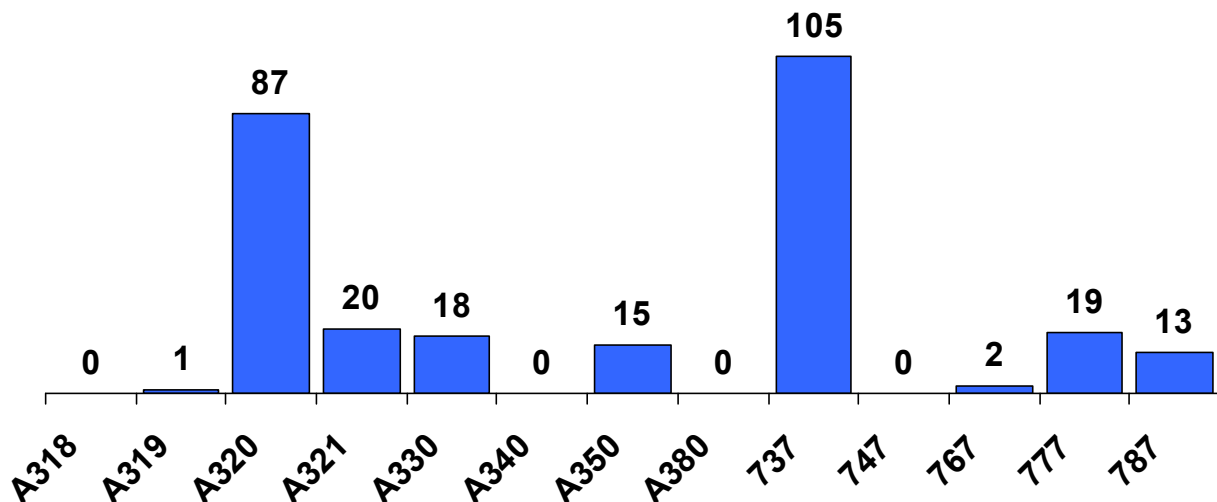
Customer	Aircraft	Engine	Number of Aircraft Cancelled
AirTran	737-700	CFM56-7B	1
SkyEurope	737-700	CFM56-7B	3
Unidentified	737-700	CFM56-7B	2
Boeing Business Jet	747-8	GENx-2B	1
All Nippon Airways	767-300ER	CF6-80C2B6F	5
Egyptair	777-300ER	GE90-115B	2
LAN Airlines	777F	GE90-110B1	1
Continental Airlines	777-200ER	GE90-115B	3
Boeing Business Jets	787-8	Trent 1000	1
LCAL	787-8	None	1
LCAL	787-8	Trent 1000	6
S7 Group	787-8	None	15
Unidentified	787-8	GENx-1B	2
Unidentified	787-8	None	1
Unidentified	787-8	None	23
LCAL	787-9	Trent 1000	9
Qantas	787-9	GENx-1B	15
US Airways	A318	PW6000	3
Aerventure	A319	CFM56-5B	2
Aerventure	A319	V2524-A5	1
Aerventure	A320	CFM56-5B4	1
Aerventure	A320	V2527-A5	3
Unidentified	A320	CFM56-5B	1
Kingfisher Airlines	A321	V2530	4
Aircastle	A330-200	Trent 700	1
Etihad	A340-600	Trent 500	1
CIT Leasing	A350-800	Trent XWB	5
<b>Total</b>			<b>113</b>

**Orders in the Last Twelve months.**  
 (Year to August 31, 2009 : 539 gross)



**Orders in the Last Twelve and in the Last Six months :** In the last six months orders were placed for 21 more aircraft than in the previous six month period (i.e. to the end of February). Five aircraft programs out of the 13 current programs have taken more orders in the last six months than in the previous six month period and, unsurprisingly, two of the five are the A320 and 737, the two largest programs. But, as the bottom chart shows, four programs (including all three four-engine programs) have taken no orders at all in the last six months and in that period only one A319 and two 767s have been ordered. By the same token, there have only been orders for 16 four-engine aircraft in the last 12 months - and only two of the 16 this year - with the A380 taking eight of those orders. The bulk of orders in both the last 12 and the last six months have been for the A320 and the 737; in both periods these two programs have accounted for well over half the total number of gross orders placed.

**Orders in the Last Six months.**  
 (Six months to August 31, 2009 : 280 gross)



## Deliveries of Large Commercial Jets :

### Recent delivery numbers are lower than last year.

It is a little bit worrying when delivery numbers fall faster than expected which is what happened in July and August. A drop was expected - there is always a drop in those two months - but this time around the difference between June and July was much larger than last year and there was another drop in August. While the July-August drop this year was nowhere near as large as last year, it did mean that the August delivery figure of 60 was not only the lowest for a single month this year but it was also the lowest since last November when the strike at Boeing affected delivery numbers.

It is a case of two poor months. July, at the time, had the lowest number of deliveries in a single month since November last year. The August delivery figure was lower.

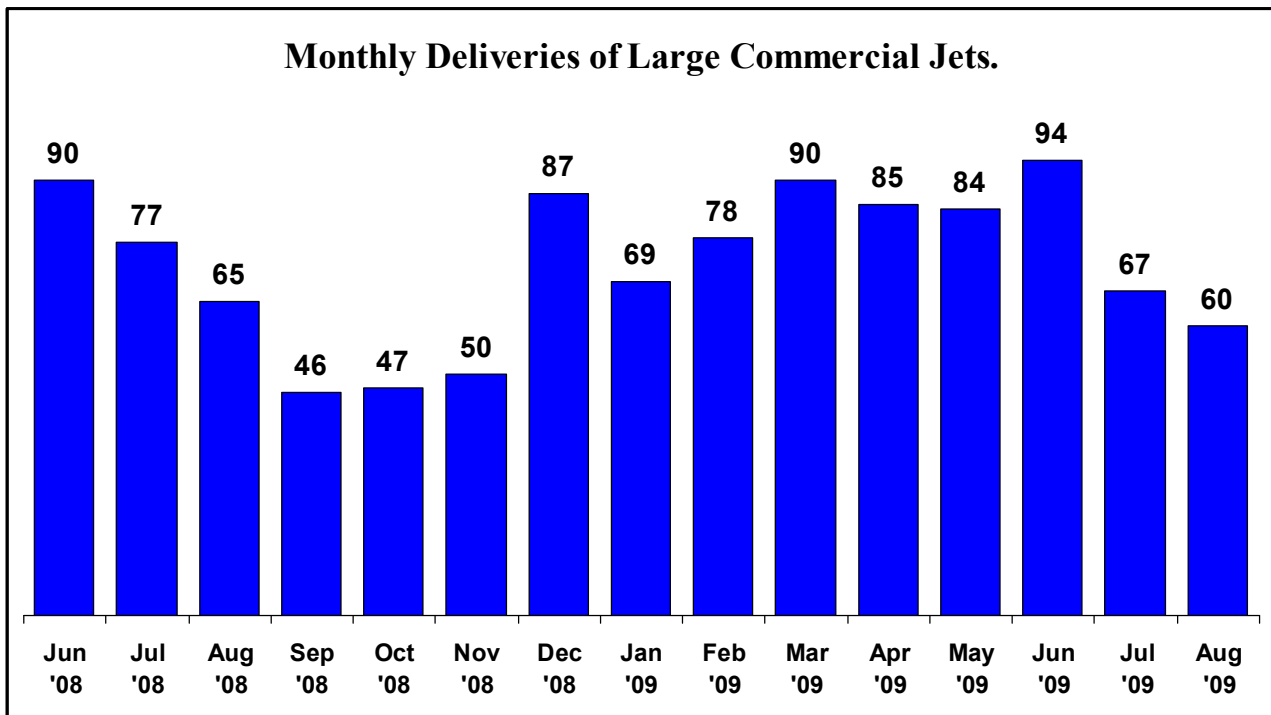
What is also a little surprising is the fact that the total number of deliveries so far this year is lower than the total for the same period last year. It is not much lower - just one aircraft fewer - but lower all the same. Airbus has delivered 320 new jets so far this year which is five more than in the same eight-month period last year. Boeing has so far delivered 307 new jets, or six fewer than in the same period last year.

Boeing's first half year delivery figure was five more than in the first half of last year but July and August figures this year are 11 aircraft fewer than in the same two months last year. Since both manufacturers are aiming for about 480 deliveries this year, Boeing will need to deliver 43 aircraft each month on average to reach that total. Airbus will need to deliver 40, on average, each month. This means very little change - Airbus has delivered a monthly average of 40 aircraft this year so far anyway.

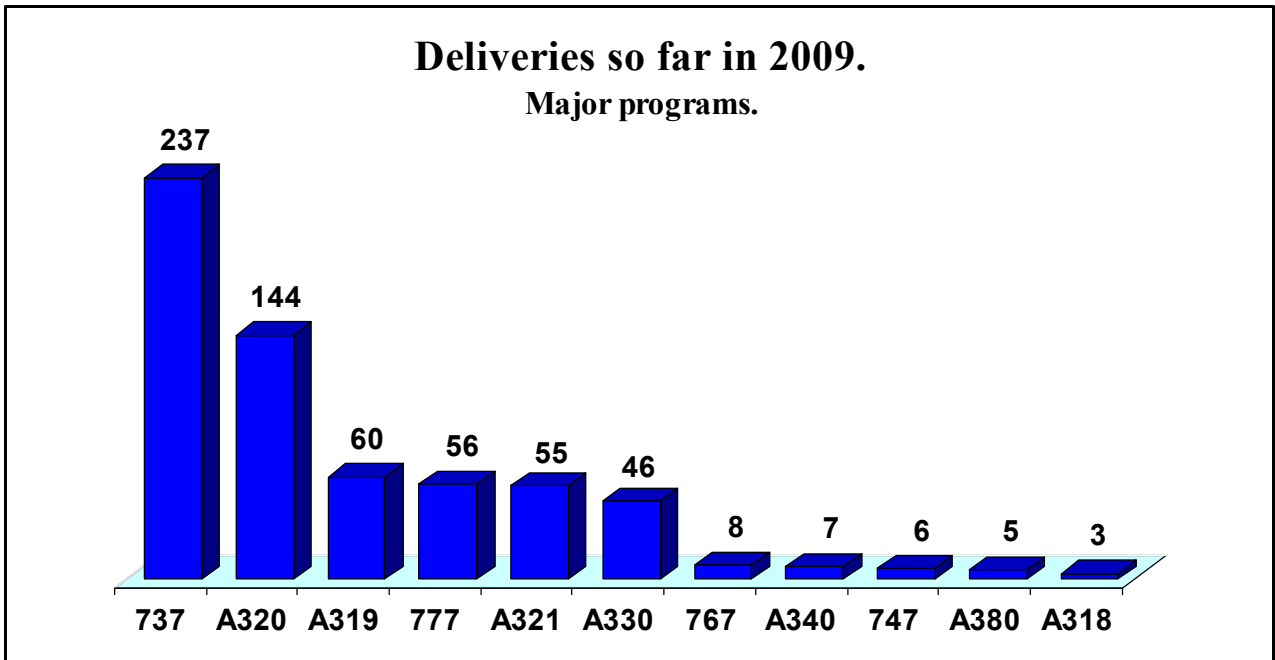
It might not be much of a surprise if Airbus is aiming to deliver slightly more aircraft this year than in 2008. Senior people in the company are fond of saying that they are looking for two record years, back-to-back. Fewer deliveries than last year will not make a record year this time.

Lower August delivery numbers came about largely because of fewer A321 and 737 deliveries. There were six fewer A321s (but five more A320s) in August than in July. Airbus' August total of 32 deliveries was just two aircraft short of the July total. Boeing's August total, on the other hand, was five less than in July and 17 fewer than in June. The same number of 767s and 777s were delivered in August as in July, but 737 deliveries have declined from 37 in June to 26 in July and then 21 in August, the lowest level since the strike.

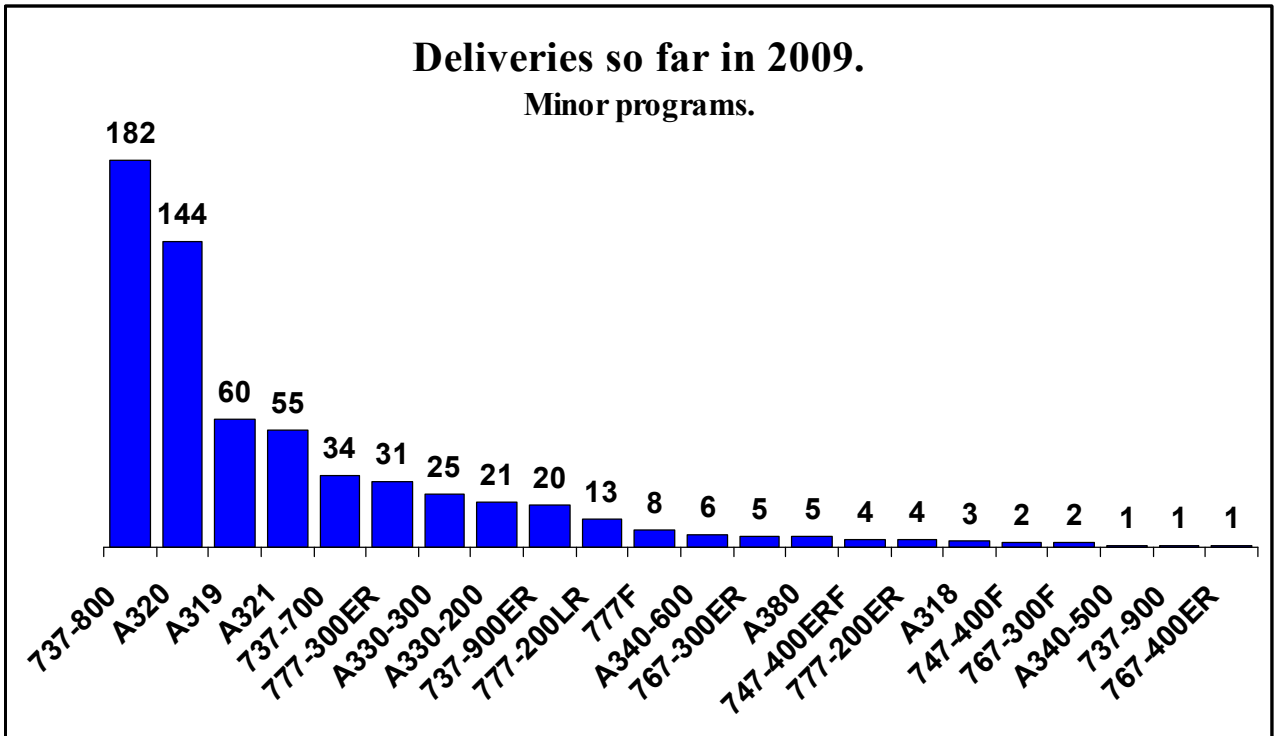
Delivery numbers should pick up again in September and then improve further in the final Quarter.



**Monthly Deliveries :** July and August are usually poor months in terms of deliveries, largely because the airlines add capacity for the Summer before the mid point of the year. This time was no exception but delivery numbers have dropped far more than expected. Both the July and August figures this year are much lower than last year to the extent that there were 15 more deliveries in July and August last year and 11 more in the three months to the end of August.



**Deliveries so far in 2009 - Major programs :** There were 627 deliveries in the eight months to the end of August with single-aisle aircraft accounting for 499 which is very nearly 80% of the total. As always, the 737 and A320 have the largest number of deliveries, together accounting for 381 of the total, or 60%. The remaining months of the year will see some improvement to A380 delivery numbers - there are to be 14 this year. The 767 will deliver 12. Single-aisles will account for most of the 330 deliveries expected in the remaining months of the year.



**Deliveries so far - Minor Programs :** Six minor programs have already delivered more aircraft than in the whole of 2008 though, to be fair, three (the 767-300F, 767-400ER and 777F) did not deliver last year. Boeing is pushing production of the 737-800 which, at the end of August, had delivered 11 fewer aircraft than in 2008. Airbus is pushing deliveries of the A330-300 which has already delivered the same number of aircraft as in 2007 and two more than last year. Deliveries of the A330-200 peaked last year and less than half the 2008 total have been delivered this year.

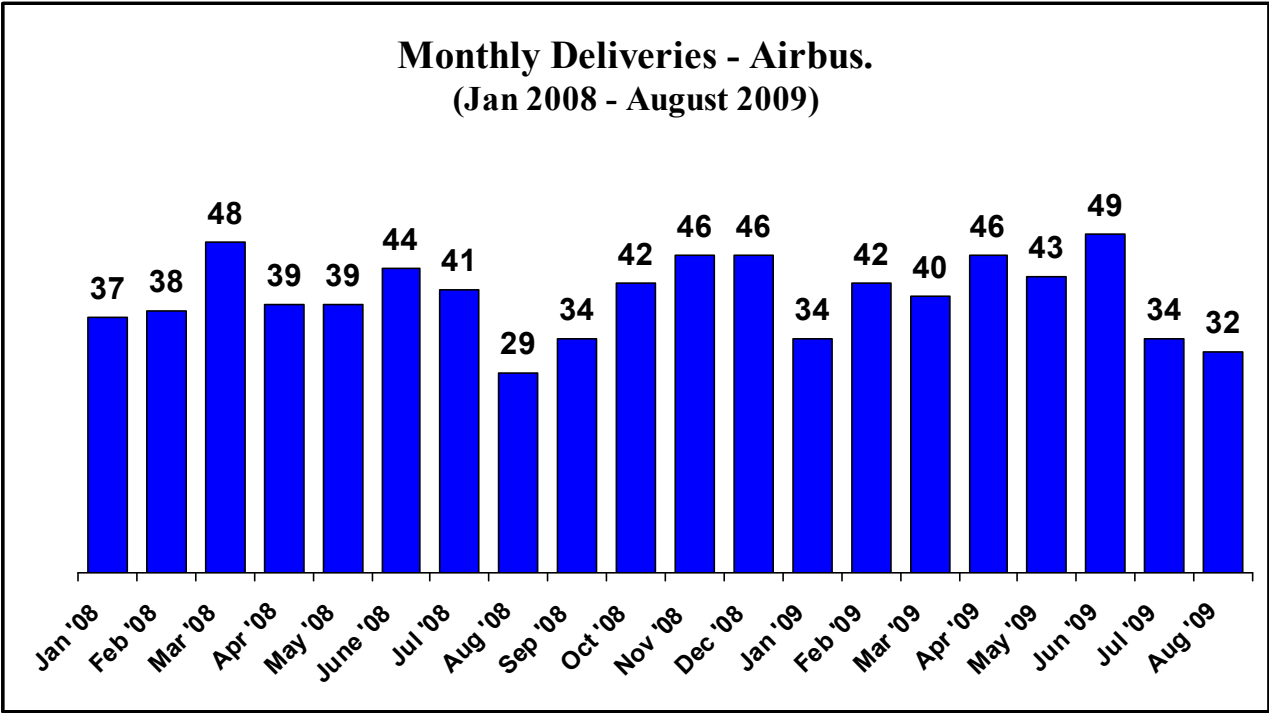
### Summary Deliveries, by Month.

Aircraft	Aug '08	Sep '08	Oct '08	Nov '08	Dec '08	Jan '09	Feb '09	Mar '09	Apr '09	May '09	June '09	July '09	Aug '09
A318	2	1	1	1		1			1				1
A319	5	6	8	14	7	9	8	14	8	10	3	4	4
A320	10	14	17	21	20	15	19	17	18	19	25	13	18
A321	5	6	5	3	5	6	8	4	8	5	10	10	4
A330	7	4	6	6	9	3	6	4	9	7	9	5	3
A340		1	4		2		1	1	1	1	1	1	1
A380		2	1	1	3				1	1	1	1	1
737 BBJ				1	1		2						
737	29	10	3		31	25	25	39	31	31	37	26	21
747	1	1			1	2		2	1	1			
767	1			1	1	1	1	1	1	2		1	1
777	5	1	2	2	7	7	8	8	6	7	8	6	6
<b>Total</b>	<b>65</b>	<b>46</b>	<b>47</b>	<b>50</b>	<b>87</b>	<b>69</b>	<b>78</b>	<b>90</b>	<b>85</b>	<b>84</b>	<b>94</b>	<b>67</b>	<b>60</b>

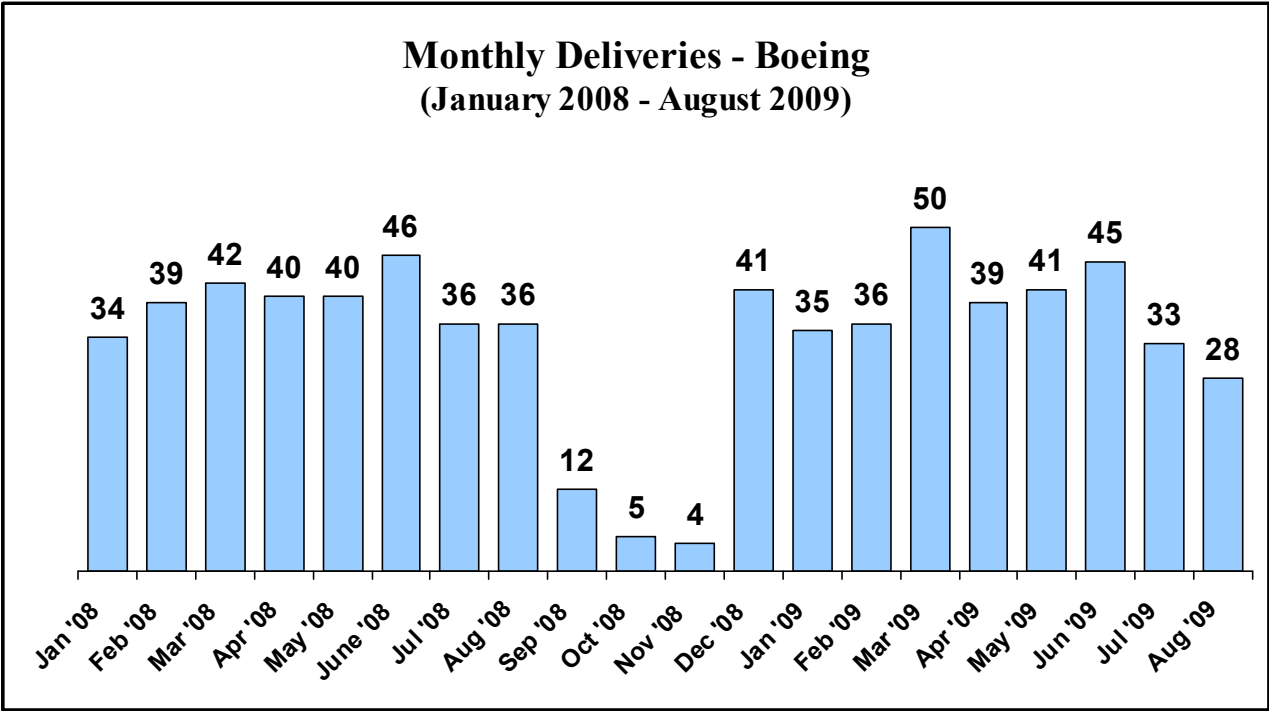
### All Program Deliveries.

Aircraft Program	Delivered in 2006	Delivered in 2007	Delivered in 2008	Delivered so far this year. *
A318	8	17	13	3
A319	137	104	98	60
A320	164	195	209	144
A321	30	51	66	55
A300-600R	9	6		
A330-200	40	43	49	21
A330-300	22	25	23	25
A340-300	2	2	3	
A340-500	4	1	2	1
A340-600	18	8	8	6
A380	0	1	12	5
717-200	5			
737-600	10			
737-700	119	109	66	34
737-800	172	212	193	182
737-900	0	0	0	1
737-900ER	0	9	31	20
747-400F	8	8	8	2
747-400ERF	6	8	6	4
767-200ER	2	1	2	2
767-300ER	7	8	8	5
767-300F	3	3		2
767-400ER				1
777-200		1		
777-200ER	23	19	3	4
777-200LR	2	10	11	13
777-300	1			
777-300ER	39	53	47	31
777F				8
<b>TOTAL</b>	<b>831</b>	<b>894</b>	<b>858</b>	<b>627</b>

\* Eight months to the end of August.



**Monthly Deliveries by Manufacturer :** For both manufacturers, August was the month with the fewest deliveries this year. The July figures were already low with Airbus delivering the same number as in January and Boeing delivering two fewer than January. The lower July numbers brought down both manufacturer's monthly average. August brought the averages down even further. By the end of the month, the Airbus average for the first eight months was 40 aircraft. Boeing's average was 38.4 per month. To get to a total of 480 deliveries this year Airbus will now need a monthly average of 40 per month for the last four months of the year. To equal last year's strike-impacted total, Boeing only needs to deliver another 68 aircraft this year but to deliver the same number as Airbus will require 173 deliveries in the last four months, a monthly average of 43.25 aircraft. That is about the same rate as was achieved in the three months to the end of May this year.



### Deliveries of Large Commercial Jets in August 2009.

<b>Customer</b>	<b>Model</b>	<b>Number</b>	<b>Engines</b>
BOC Aviation	737-700	1	CFM56-7B
China Eastern Airlines	737-700	1	CFM56-7B
China Southern Airlines	737-700	1	CFM56-7B
Southwest Airlines	737-700	1	CFM56-7B
Turkmenistan Airlines	737-700	1	CFM56-7B
American Airlines	737-800	3	CFM56-7B
BOC Aviation	737-800	1	CFM56-7B
China Eastern Airlines	737-800	1	CFM56-7B
Egyptair	737-800	1	CFM56-7B
GOL Airlines	737-800	1	CFM56-7B
Hainan Airlines	737-800	1	CFM56-7B
Norwegian Air Shuttle ASA	737-800	1	CFM56-7B
Pegasus Airlines	737-800	1	CFM56-7B
Shandong Airlines	737-800	1	CFM56-7B
Shenzhen Airlines	737-800	1	CFM56-7B
Xiamen Airlines	737-800	1	CFM56-7B
Continental Airlines	737-900ER	2	CFM56-7B
Lion Air	737-900ER	1	CFM56-7B
DHL International	767-300F	1	CF6-80C2B7F
Air India	777-200LR	1	GE90-115B
Air India	777-300ER	2	GE90-115B
Emirates	777-300ER	1	GE90-115B
KLM - Royal Dutch Airlines	777-300ER	1	GE90-115B
Korean Air	777-300ER	1	GE90-115B
British Airways	A318	1	CFM56-5B
Aeroflot (BOC Aviation)	A319	1	CFM56-5B
Afriqiyah Airways	A319	1	CFM56-5B
China Southern Airlines	A319	1	CFM56-5B
Sichuan Airlines	A319	1	V2524-A5
Air Berlin	A320	1	CFM56-5B4
AirAsia	A320	1	CFM56-5B4
Avianca	A320	3	CFM56-5B
China Southern Airlines	A320	2	CFM56-5B
easyJet	A320	3	CFM56-5B
IndiGo	A320	1	V2527-A5
Juneyao Airlines (Aerdragon)	A320	1	CFM56-5B
NACIL (Indian Airlines)	A320	1	CFM56-5B4
Olympic Air (Alafco)	A320	2	CFM56-5B
Shenzhen Airlines	A320	1	V2527-A5
TAM - Linhas Aereas	A320	1	V2527-A5
Tiger Airways	A320	1	V2527-A5
Lufthansa	A321	2	V2530-A5
NACIL (Indian Airlines)	A321	2	CFM56-5B
Afriqiyah Airways	A330-200	1	CF6-80E1
Royal Australian Air Force (MTAD)	A330-200	1	CF6-80E1
Swiss International Air Lines	A330-300	1	PW4000
Etihad Airways	A340-600	1	Trent 500
Qantas Airways	A380	1	Trent 900
<b>Total August Deliveries</b>		<b>60</b>	

## The Large Commercial Jet Backlog :

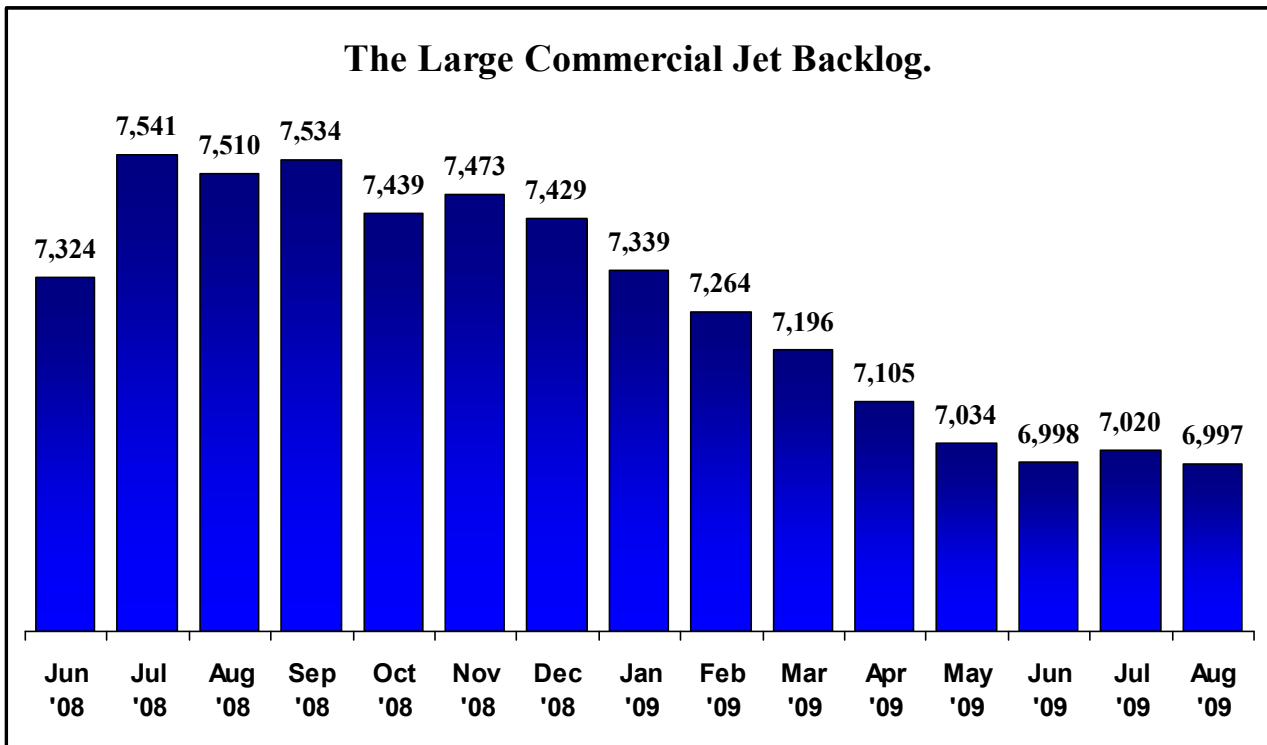
### Down again in August.

The backlog gain in July was probably never going to last anyway. While it was the first monthly gain since last November, the total large commercial jet backlog dropped again in August and at the end of the month reached the lowest level so far this year. The total was just one aircraft fewer than at the end of June, but that was enough to make August a new low-point. Since the start of this year the large commercial jet backlog has declined by 432 aircraft (Boeing are down 237 and Airbus are down 195). In the 12 months since the end of August last year the backlog has dropped by 513 aircraft.

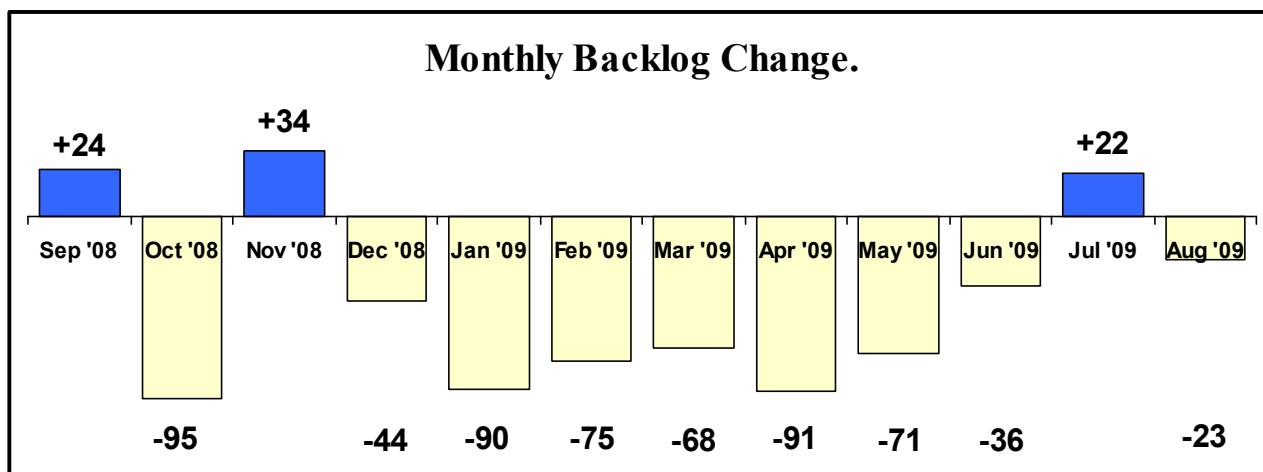
Interestingly enough, at no point this year has the backlog dropped below the 6,848 figure of December 2007. That is not a magical point in time by any means but it is to a certain extent a psychological point. Month-end figures at the moment are still the lowest of 2008 and 2009. The backlog has not yet dipped below the level at the very start of 2008. However, for Airbus the August backlog figure of 3,520 was the lowest for 20 months, i.e. since the end of 2007. Boeing's August figure of 3,458 aircraft was the lowest for the company since the end of January last year. Airbus had a small gain in June and then again in July but the August total was one aircraft less than the figure at the end of May which had been the lowest level for the European company this year. The Boeing low was in June and the company's backlog has improved in both of the months since but, at the end of August, the total was just eight aircraft more than at the end of June.

It does look as though the decline has eased a little. The backlog drop of 23 aircraft in August is far less than the 95 of last November, or the 91 of April this year. The trouble is that orders are few and far between and with delivery rates still running relatively high, the backlog will inevitably continue to go down. The easing that we have seen recently could easily swing the other way.

Both single-aisle and widebody backlogs are down 5.8% on the level at the start of the year. There have been some very large backlog falls this year - the 737 is down 119 aircraft, the A319 is down 68 aircraft and the A320 is down 54. In the widebody segment, the A350 has a backlog gain - it is up 10 aircraft on the level at the start of this year - but the 787 backlog is down 60, the 777 is down 40 and the A330 backlog is down 29 on the figure at the start of this year. Quite clearly the year-end backlog will be much lower than at the start of the year. The order intake is running far behind production and by the end of the year the backlog could well be a fairly long way below the December 2007 figure.



**The Large Commercial Jet Backlog :** The July gain may well turn out to be a little blip in the middle of a long downturn. The improvement during the month was effectively wiped out by the further decline in August leaving the backlog at a lower level than at the end of June. Since the start of the year the backlog has dropped by 432 aircraft.



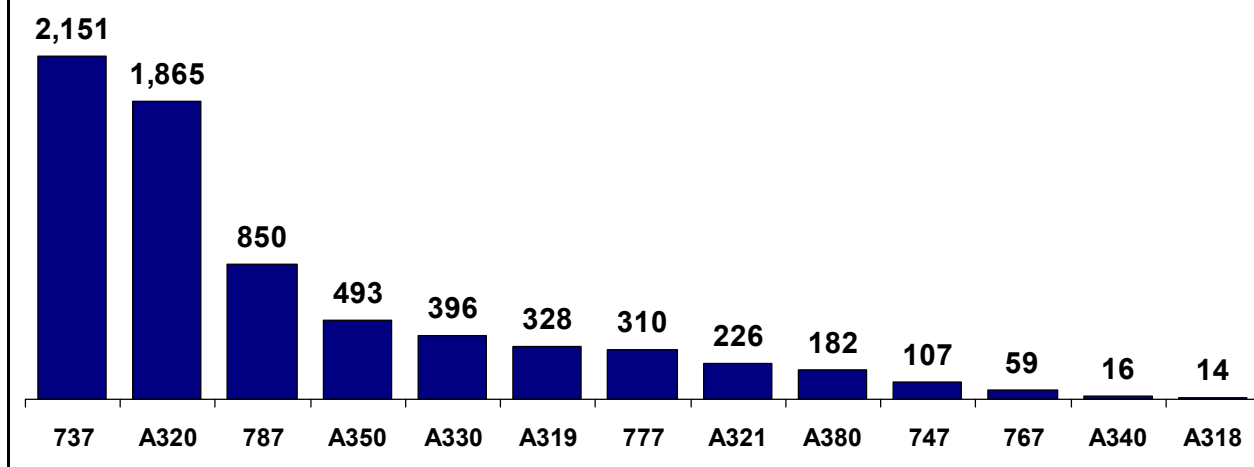
**Monthly Backlog Change :** Down again in August. The backlog decline did appear to have been slowing after April and the July improvement was the first this year. In August, though, the backlog fell yet again due, simply, to more deliveries than orders. There were only two cancellations during the month.

#### Backlog Change : Major Programs on August 31, 2009.

Aircraft Model	Change in the last 12 months.	Change since the start of 2009	Change in the last three months.
A318	-15	-6	-1
A319	-157	-68	-17
A320	-64	-54	27
A321	-34	-37	-4
A330	-45	-29	-9
A340	-16	-8	-4
A350	41	10	10
A380	-4	-3	-3
<b>Total Airbus</b>	<b>-294</b>	<b>-195</b>	<b>-1</b>
737	-133	-119	-7
747	-8	-7	0
767	13	-11	0
777	-46	-40	-13
787	-45	-60	-16
<b>Total Boeing</b>	<b>-219</b>	<b>-237</b>	<b>-36</b>
<b>Total Change</b>	<b>-513</b>	<b>-432</b>	<b>-37</b>

**Note :** Change refers to the change up to August 31, 2009.

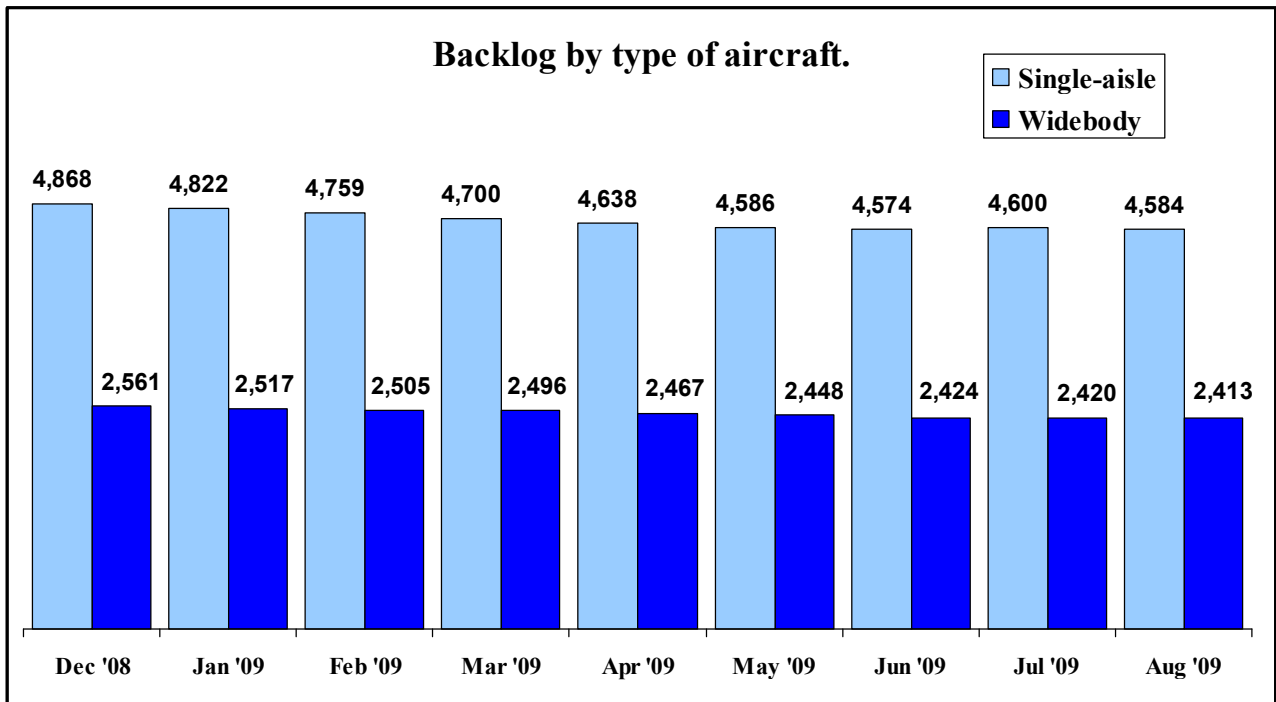
### Large Commercial Jet Backlogs. (Program Backlogs on August 31, 2009.)



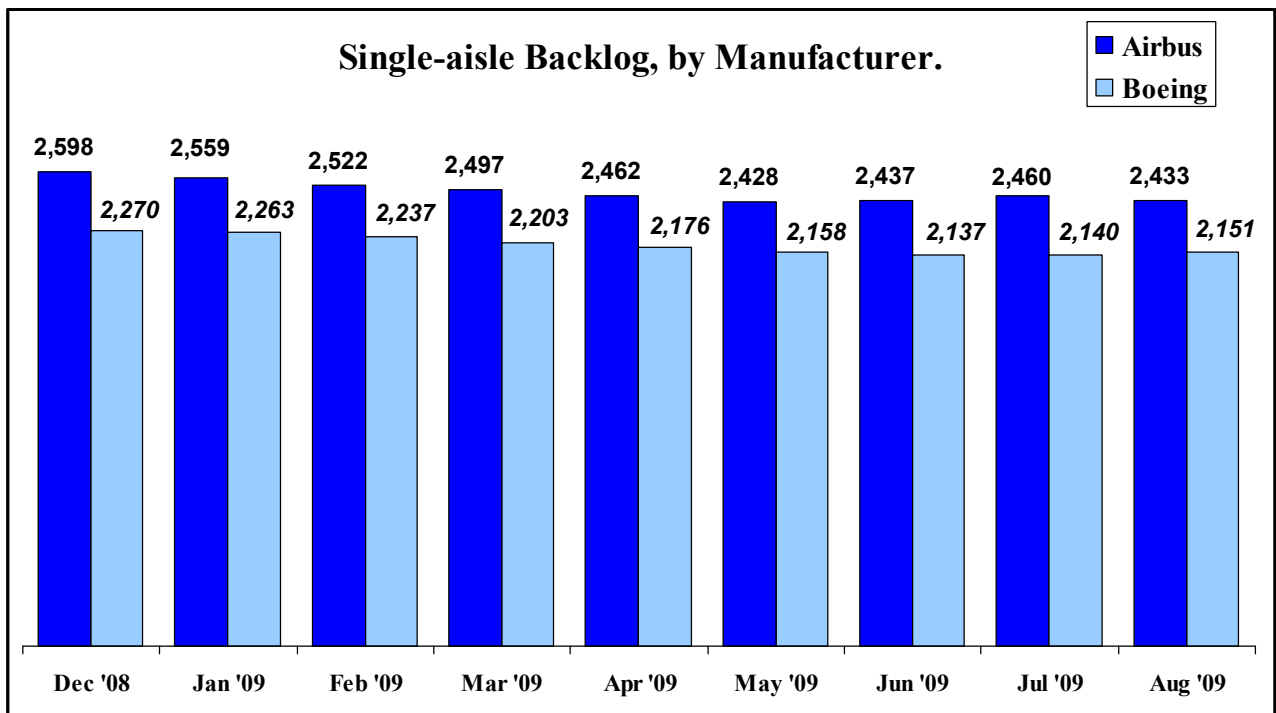
**Large Commercial Jet Backlogs :** The program running order of programs hardly seems to change from one month to the next, largely because there is a significant difference in individual backlogs. However the three largest programs taken together have dropped over 240 aircraft from their firm backlog order books in the last 12 months, or roughly half the total decline of all programs in that time. We tend to think that programs like the 737 and A320 would have the largest backlog declines but in fact that accolade goes to the A319. This program's backlog is 157 aircraft below the level at the end of August last year.

### Monthly Backlog : Major Programs over the past year.

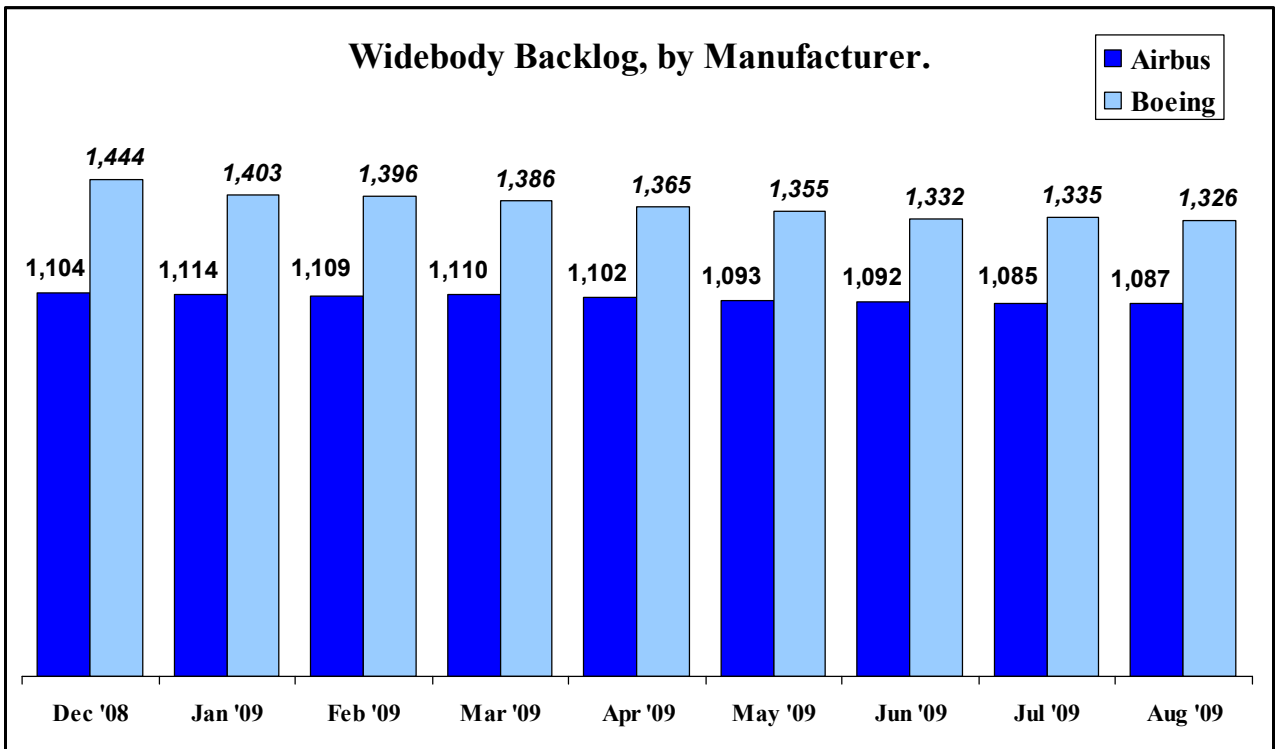
Aircraft Model	Aug 2007	Sep 2008	Oct 2008	Nov 2008	Dec 2008	Jan 2009	Feb 2009	Mar 2009	Apr 2009	May 2009	June 2009	July 2009	Aug 2009
A318	29	28	21	20	20	16	16	16	15	15	15	15	14
A319	485	485	408	403	396	385	376	362	355	345	343	335	328
A320	1,929	1,932	1,916	1,936	1,919	1,901	1,881	1,874	1,857	1,838	1,840	1,881	1,865
A321	260	254	256	253	263	257	249	245	235	230	239	229	226
A330	441	442	440	434	425	422	416	418	412	405	397	392	396
A340	32	26	23	23	24	24	23	22	21	20	18	17	16
A350	452	458	458	483	483	483	483	483	483	483	493	493	493
A380	186	184	183	188	185	185	187	187	186	185	184	183	182
<b>Total Airbus</b>	<b>3,814</b>	<b>3,809</b>	<b>3,705</b>	<b>3,740</b>	<b>3,715</b>	<b>3,673</b>	<b>3,631</b>	<b>3,607</b>	<b>3,564</b>	<b>3,521</b>	<b>3,529</b>	<b>3,545</b>	<b>3,520</b>
737	2,284	2,292	2,299	2,297	2,270	2,263	2,237	2,203	2,176	2,158	2,137	2,140	2,151
747	115	115	115	115	114	112	112	110	108	107	107	107	107
767	46	64	68	71	70	69	68	67	66	59	61	60	59
777	356	359	357	355	350	343	338	331	330	323	314	318	310
787	895	895	895	895	910	879	878	878	861	866	850	850	850
<b>Total Boeing</b>	<b>3,696</b>	<b>3,725</b>	<b>3,734</b>	<b>3,733</b>	<b>3,714</b>	<b>3,666</b>	<b>3,633</b>	<b>3,589</b>	<b>3,541</b>	<b>3,513</b>	<b>3,469</b>	<b>3,475</b>	<b>3,477</b>
<b>Total Backlog</b>	<b>7,510</b>	<b>7,534</b>	<b>7,439</b>	<b>7,473</b>	<b>7,429</b>	<b>7,339</b>	<b>7,264</b>	<b>7,196</b>	<b>7,105</b>	<b>7,034</b>	<b>6,998</b>	<b>7,020</b>	<b>6,997</b>



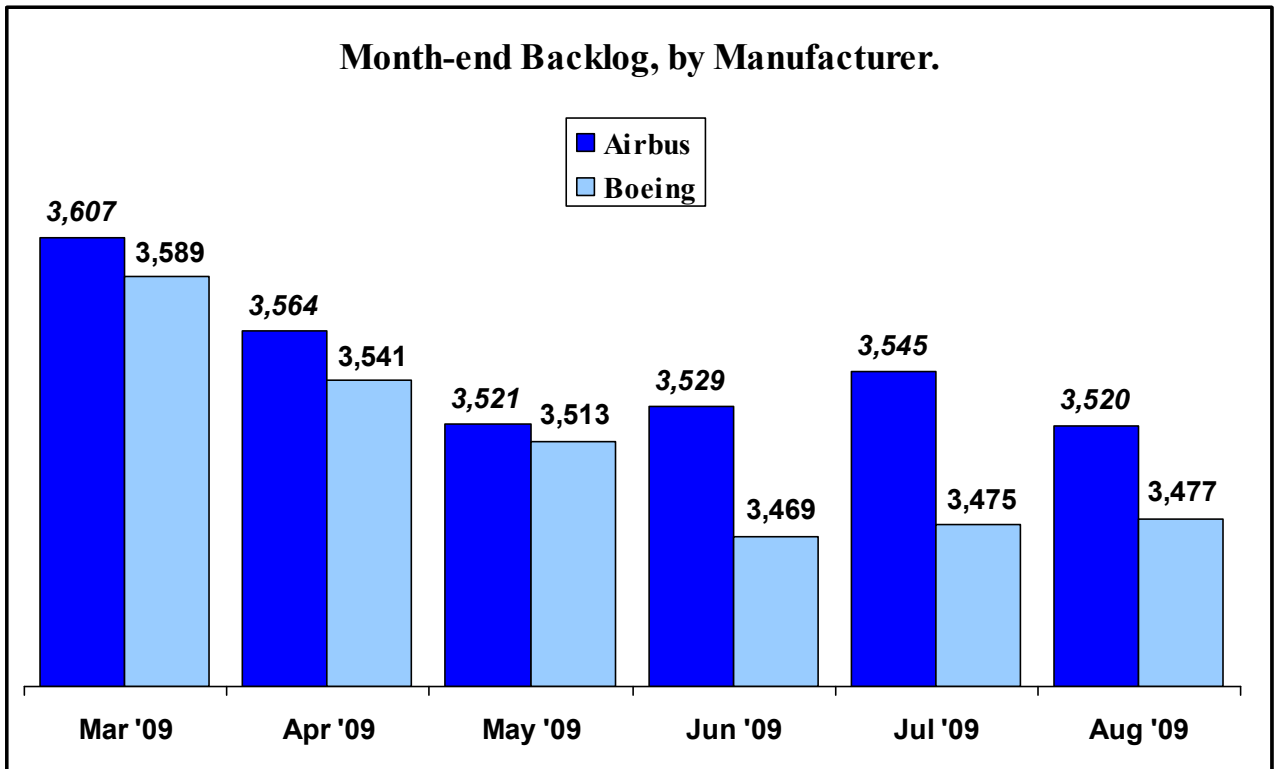
**Backlog by type of aircraft :** The widebody backlog fell again in August and the figure at the end of the month was 148 below the level at the start of the year, a decline of 5.8%. The single-aisle backlog, which had gone up in July for the first time this year, fell back again in August and at the end of the month was 10 aircraft above the lowest point in the year. The single-aisle backlog is 284 aircraft down on the level at the start of this year, which is also a drop of 5.8%.



**Single-aisle backlog by manufacturer:** Boeing's single-aisle backlog grew again in August, for the second month in a row and at the end of the month was 14 above the low point at the end of June. Since the start of this year, the Boeing single-aisle backlog has dropped by 119 aircraft. Airbus' single-aisle backlog has dropped by 165 aircraft. The European manufacturer had a gain in July but a further decline in August.



**Widebody backlog by manufacturer :** Boeing has a larger widebody backlog than Airbus but the level reached a new low at the end of August. Boeing's widebody backlog has dropped by 118 aircraft since the start of the year. The Airbus widebody backlog, on the other hand, had the second monthly gain this year though the improvement was just two aircraft. In March it increased by one.

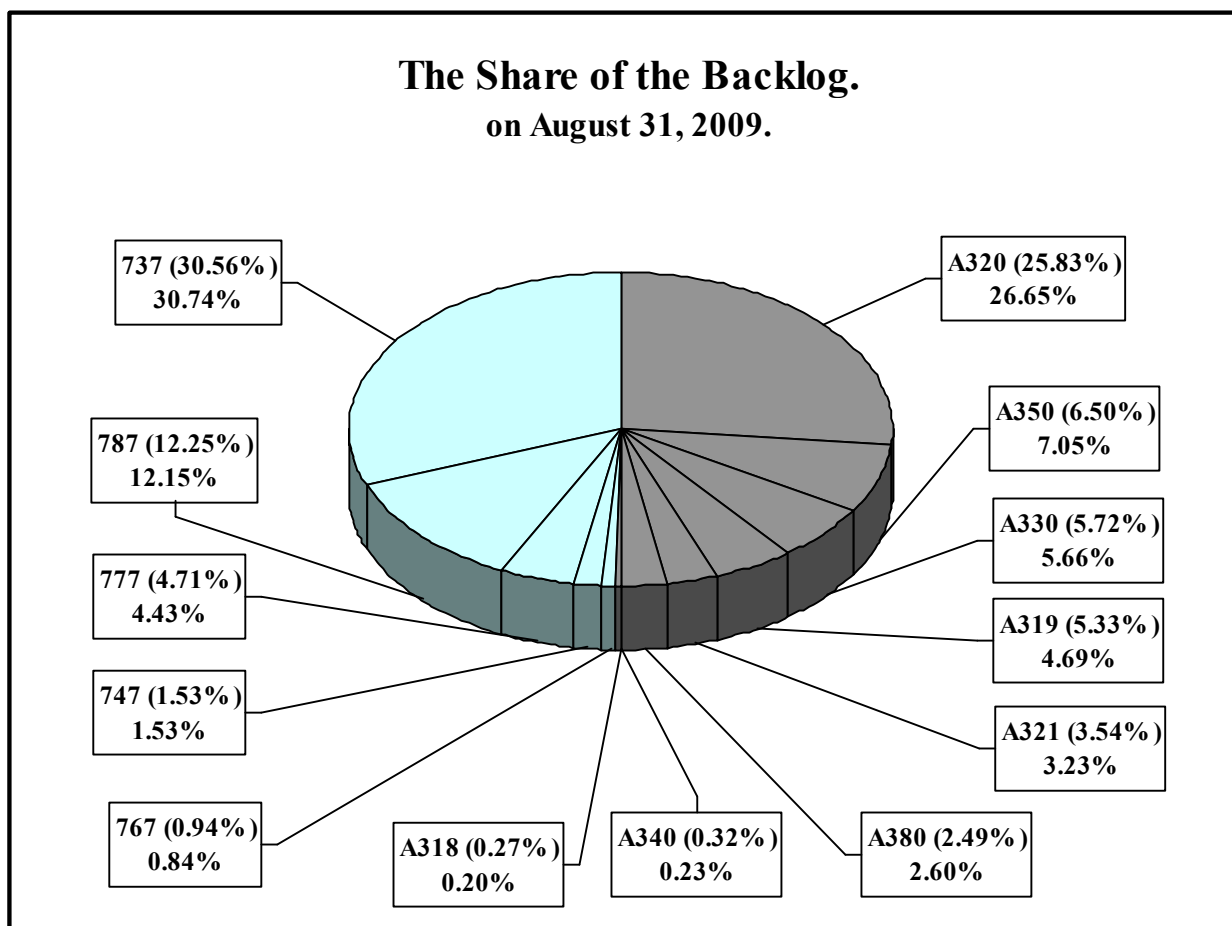


**Backlog by Manufacturer :** After the improvements in June and July the Airbus backlog declined again in August, reaching the lowest point so far this year. Boeing had the second consecutive monthly backlog increase in August but the gain was really very small - two more than at the end of July and eight more than at the end of June.

**Backlog Change - all aircraft programs as of August 31, 2009.**

	<b>Backlog change since Aug 31, 2008.</b>	<b>Backlog change since the start of 2009</b>	<b>Backlog change since June 30, 2009.</b>	<b>Change in the last month.</b>
A318	-15	-6	-1	-1
A319	-157	-68	-15	-7
A320	-64	-54	25	-16
A321	-34	-37	-13	-3
A330-200	-36	-19	-8	-5
A330-200F	-9			
A330-300		-10	7	9
A340-200/300	-1			
A340-500	-5	-1		
A340-600	-10	-7	-2	-1
A350-800	1			
A350-900	15	10		
A350-1000	25			
A380	-4	-3	-2	-1
<b>Total Airbus</b>	<b>-294</b>	<b>-195</b>	<b>-9</b>	<b>-25</b>
737-700	-21	-15		6
737-800	-83	-81	17	6
737-900	-1	-1		
737-900ER	-28	-22	-3	-1
747-400F	-4	-2		
747-400ERF	-4	-4		
747-8		-1		
747-8F				
767-300ER	16	-8		
767-300F	-2	-2	-2	-1
767-400ER	-1	-1		
777-200ER	-13	-7	-3	-2
777F	-6	-6	3	-1
777-200LR	-15	-17	-3	-5
777-300ER	-12	-10	-1	
787-3	-15	-15		
787-8	-16	-16	2	
787-9	-14	-29	-2	
<b>Total Boeing</b>	<b>-219</b>	<b>-237</b>	<b>8</b>	<b>2</b>
<b>Total Backlog</b>	<b>-513</b>	<b>-432</b>	<b>-1</b>	<b>-23</b>

## The Share of the Backlog. on August 31, 2009.



The share of the Backlog : The share on Dec. 31, 2008 is shown in brackets so that comparisons can be made.

### Competitor Backlog Positions and their Market Share.

	Aug 2008	Sep 2008	Oct 2008	Nov 2008	Dec 2008	Jan 2009	Feb 2009	Mar 2009	Apr 2009	May 2009	June 2009	July 2009	Aug 2009
Airbus	3,814	3,809	3,705	3,740	3,715	3,673	3,631	3,607	3,564	3,521	3,529	3,545	3,520
Boeing	3,696	3,725	3,734	3,733	3,714	3,666	3,633	3,589	3,541	3,513	3,469	3,475	3,477
<b>Total Backlog</b>	<b>7,510</b>	<b>7,534</b>	<b>7,439</b>	<b>7,473</b>	<b>7,429</b>	<b>7,339</b>	<b>7,264</b>	<b>7,196</b>	<b>7,105</b>	<b>7,034</b>	<b>6,998</b>	<b>7,020</b>	<b>6,997</b>
Difference *	118	84	-29	7	1	7	-2	18	23	8	60	70	43
Airbus share (%)	50.78	50.55	49.81	50.05	50.00	50.04	49.98	50.12	50.16	50.05	50.43	50.49	50.30
Boeing share (%)	49.22	49.45	50.19	49.95	49.99	49.96	50.02	49.88	49.84	49.95	49.57	49.51	49.70

\* Difference : This is the Airbus figure *less* the Boeing figure.

## Monthly Backlog Development of all Aircraft Programs.

Aircraft Model	Aug 2008	Sep 2008	Oct 2008	Nov 2008	Dec 2008	Jan 2009	Feb 2009	Mar 2009	Apr 2009	May 2009	June 2009	July 2009	Aug 2009
A318	29	28	21	20	20	16	16	16	15	15	15	15	14
A319	485	485	408	403	396	385	376	362	355	345	343	335	328
A320	1,929	1,932	1,916	1,936	1,919	1,901	1,881	1,874	1,857	1,838	1,840	1,881	1,865
A321	260	254	256	253	263	257	249	245	235	230	239	229	226
A330-200	235	232	232	224	218	213	211	214	214	211	207	204	199
A330-200F	74	74	74	74	65	65	65	65	65	65	65	65	65
A330-300	132	136	134	136	142	144	140	139	133	129	125	123	132
A340-200/300	1	1											
A340-500	11	5	6	6	7	7	7	7	6	6	6	6	6
A340-600	20	20	17	17	17	17	16	15	15	14	12	11	10
A350-800	181	182	182	182	182	182	182	182	182	182	182	182	182
A350-900	221	226	226	226	226	226	226	226	226	226	236	236	236
A350-1000	50	50	50	75	75	75	75	75	75	75	75	75	75
A380	186	184	183	188	185	185	187	187	186	185	184	183	182
<b>Total Airbus</b>	<b>3,814</b>	<b>3,809</b>	<b>3,705</b>	<b>3,740</b>	<b>3,715</b>	<b>3,673</b>	<b>3,631</b>	<b>3,607</b>	<b>3,564</b>	<b>3,521</b>	<b>3,529</b>	<b>3,545</b>	<b>3,520</b>
737-700	564	560	560	562	558	563	561	556	548	547	543	537	543
737-800	1,503	1,515	1,524	1,520	1,501	1,495	1,474	1,448	1,430	1,416	1,403	1,414	1,420
737-900 BBJ	8	8	8	8	8	8	7	7	7	7	7	7	7
737-900ER	209	209	207	207	203	197	195	192	191	188	184	182	181
747-400F	4	3	3	3	2	1	1	1	1				
747-400ERF	6	6	6	6	6	5	5	3	2	2	2	2	2
747-8	27	28	28	28	28	28	28	28	27	27	27	27	27
747-8F	78	78	78	78	78	78	78	78	78	78	78	78	78
767-300ER	12	30	34	37	36	36	35	34	33	26	28	28	28
767-300F	33	33	33	33	33	33	33	33	33	33	33	32	31
767-400ER	1	1	1	1	1								
777-200ER	32	27	27	26	26	26	26	25	25	23	22	21	19
777-200LR	26	28	28	27	26	25	23	20	18	19	17	21	20
777-300ER	223	231	229	229	225	219	218	218	219	215	211	213	208
777F	75	73	73	73	73	73	71	68	68	66	64	63	63
787-3	43	43	43	43	43	43	43	43	43	28	28	28	28
787-8	644	644	644	644	644	622	621	621	604	627	626	628	628
787-9	208	208	208	208	223	214	214	214	214	211	196	194	194
<b>Total Boeing</b>	<b>3,696</b>	<b>3,725</b>	<b>3,734</b>	<b>3,733</b>	<b>3,714</b>	<b>3,666</b>	<b>3,633</b>	<b>3,589</b>	<b>3,541</b>	<b>3,513</b>	<b>3,469</b>	<b>3,475</b>	<b>3,477</b>
<b>Total Backlog</b>	<b>7,510</b>	<b>7,534</b>	<b>7,439</b>	<b>7,473</b>	<b>7,429</b>	<b>7,339</b>	<b>7,264</b>	<b>7,196</b>	<b>7,105</b>	<b>7,034</b>	<b>6,998</b>	<b>7,020</b>	<b>6,997</b>

Boeing Business Jets : August 2009 : 20 737-700s, four 737-800s and seven 737-900s.

### The Largest Minor Aircraft Programs.

(Ranked by % share of the Total Backlog on August 31, 2009)

Program	Share of the December 31 2008 Backlog %	Backlog on August 31, 2009	Share of the August 31, 2009 Backlog %
A320	25.83	1,865	26.65
737-800	20.20	1,420	20.29
787-8	8.67	628	8.98
737-700	7.51	543	7.76
A319	5.33	328	4.69
A350-900	3.04	236	3.37
A321	3.54	226	3.23
777-300ER	3.03	208	2.97
A330-200	2.93	199	2.84
787-9	3.00	194	2.77
A380	2.49	182	2.60
A350-800	2.44	182	2.60

### The Share of the Backlog - all Minor Programs.

Program	Share of the 2007 year-end backlog %	Share of the 2008 year-end backlog %	Share of the backlog on August 31, 2009 %
A318	0.73	0.27	0.20
A319	8.14	5.33	4.69
A320	24.28	25.83	26.65
A321	3.55	3.54	3.23
A310	0.07	0.00	0.00
A330-200	2.78	2.93	2.84
A330-200F	0.96	0.87	0.93
A330-300	1.45	1.91	1.89
A340-200/300	0.04	0.00	0.00
A340-500	0.18	0.09	0.09
A340-600	0.38	0.23	0.14
A350-800	1.91	2.45	2.60
A350-900	2.18	3.04	3.37
A350-1000	0.58	1.01	1.07
A380	2.75	2.49	2.60
737-700	8.28	7.51	7.76
737-800	19.62	20.20	20.29
737-900 BBJ	0.09	0.11	0.10
737-900ER	2.34	2.73	2.59
747-400F	0.15	0.03	0.00
747-400ERF	0.18	0.08	0.03
747-8	0.37	0.38	0.39
747-8F	1.14	1.05	1.11
767-200ER	0.03	0.00	0.00
767-300ER	0.22	0.48	0.40
767-300F	0.50	0.44	0.44
767-400ER	0.01	0.01	0.00
777-200ER	0.39	0.35	0.27
777-200LR	0.50	0.35	0.29
777-300ER	3.16	3.03	2.97
777F	1.17	0.98	0.90
787-3	0.63	0.58	0.40
787-8	8.79	8.67	8.98
787-9	2.51	3.00	2.77
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

NB : Due to rounding down, the share columns do not tally to 100.00 exactly.

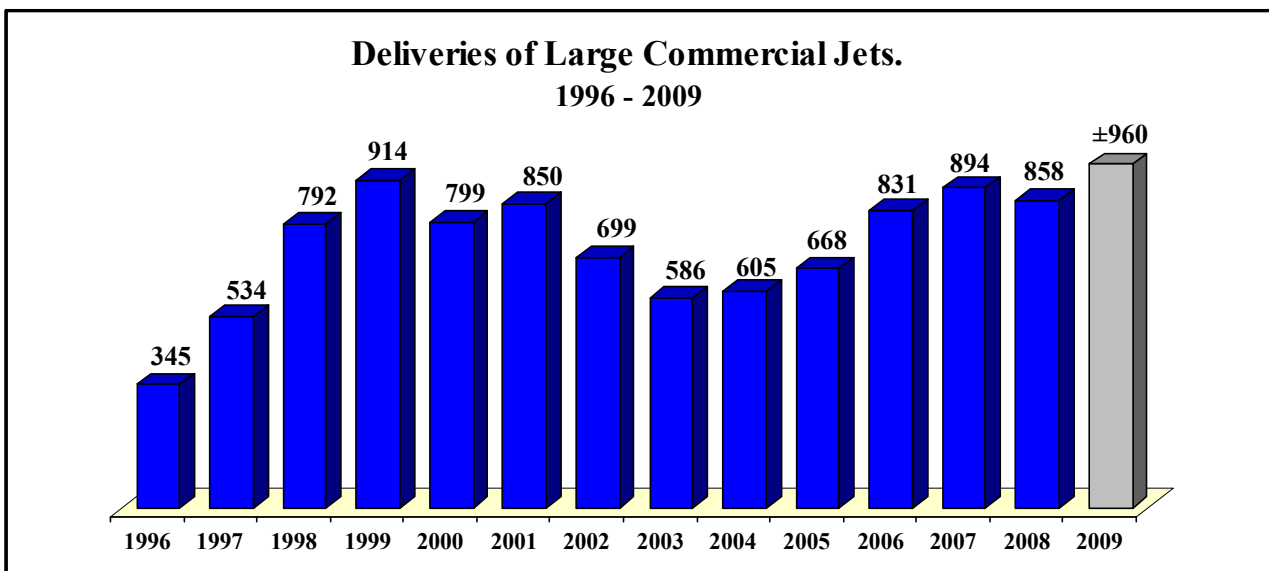
## Production Rates :

### Production Guideline.

	2007	2008	2009
<b>Airbus</b>	453	483	± 480
<b>Boeing</b>	441	375	± 480
<b>Bombardier</b>	128	110	± 120
<b>Embraer</b>	169	204	± 200
<b>ATR</b>	44	55	± 52

### Large Commercial Jet Production.

Aircraft	Delivered in 2006	Delivered in 2007	Delivered in 2008	2009 Projected
Airbus (all models)	434	453	483	480
Airbus A320 Family	339	367	386	382
Airbus A330/A340	86	79	85	76
A318	8	17	13	5
A319	137	104	98	96
A320	164	195	209	216
A321	30	51	66	65
A300-600R	9	6		
A330	62	68	72	68
A340	24	11	13	8
A380		1	12	14
Boeing (all models)	397	441	375	480
Boeing 717-200	5			
Boeing 737 (excl BBJ)	290	330	284	356
BBJ	11	5	6	6
Boeing 747	14	16	14	8
Boeing 767	12	12	10	12
Boeing 777	65	83	61	96
Boeing 787				0
<b>Total Large Commercial Jets</b>	<b>831</b>	<b>894</b>	<b>858</b>	<b>± 960</b>



Note : The 2009 figure is an estimate.

## Notes on Current and Future Production Rates : Large Commercial Jets.

**N.B.** The \* symbol is used to show that there have been changes to our program remarks since the last issue. Where the symbol is not shown, there has been no change.

### **Airbus \***

So far this year Airbus has delivered 320 new commercial jet aircraft, an average rate of 40 per month. If this average rate is maintained for the rest of the year the company will deliver a total of 480 deliveries this year. Production has slowed in July and August and the number of deliveries in August was the lowest for a single month since August last year.

In mid-February Airbus announced that it was revising the production rate of the A320 Family from 36 per month to 34 per month from October 2009 onwards. In the same announcement the company said that production rates of the A330/A340 family would stay at 8.5 per month and will not be increased further. Airbus will be scaling back production and deliveries of the A340 this year while increasing production of passenger versions of the A330.

### **Airbus A318 \***

There have been three A318 deliveries so far this year, one in January, another in April and the third in August. The backlog at the end of August was 14, six fewer than at the start of the year. British Airways has one on backlog and the remaining 13 are CFM56-5-powered executive jet versions.

The original projection for the year was for up to 10 deliveries but that has been revised to five. There were 13 deliveries last year. Deliveries had run at a rate of four per quarter in the second and third quarters of last year but dropped to two in Q4 and this year it has been one per Quarter.

### **Airbus A319 \***

The backlog at the end of August was 328 and there have been 60 deliveries so far this year. The projection for the full year is for a total of 96, or eight per month on average. There were 98 deliveries last year, 104 in 2007 and 137 in 2006.

### **Airbus A320 \***

There have been 144 deliveries so far this year; 51 in the First Quarter and 62 (a record) in Q2. There were 25 deliveries in June which was a high but just 13 were delivered in July and this was followed by 18 in August. There were 209 deliveries last year. The backlog at the end of August this year was 1,865. The projection for this year is for about 216 deliveries which implies a monthly average of 18. (The monthly average between January and August was also 18.)

There were 195 deliveries in 2007 and 164 in 2006.

### **Airbus A321 \***

There have been 55 deliveries so far this year and the projection for the full year is for 65 deliveries, one less than last year. The backlog at the end of August was 226. It was 263 at the start of the year.

### **Airbus A330 \***

There have been 46 deliveries so far this year; 25 A330-300s and 21 A330-200s. Airbus has switched emphasis from the -200 to the -300 and the A330-300 has now delivered more aircraft than in the whole of 2008. Last year Airbus delivered 49 A330-200s and 23 A330-300s. The projection for this year is for a total of 68 deliveries of which about 40 will be A330-300s. At the end of August the backlog was 396 aircraft. 331 of these are passenger versions of the A330. The freighter versions are all A330-200Fs.

### **Airbus A330-200F \***

The first flight of this aircraft will be in November this year. The final assembly of the first aircraft started in June, Certification is planned for the Spring of 2010 and Etihad Airways will be the first customer to take delivery. The backlog at the end of August was 65. The backlog has not changed since last November.

### **Airbus A340 \***

Deliveries have run at one per month since February. There were none in January and so far the company has delivered six A340-600s and one A340-500. At the end of August the backlog was 16, made up of six A340-500s and 10 A340-600s. There were 13 deliveries last year, six in the final quarter though four of these were delivered in October. The last three A340-300s were delivered last year, together with two A340-500s and eight A340-600s. With attention now on the A330 it is thought that deliveries of A340s will reduce this year, to about eight, which is one third of the 2006 level. There were 11 deliveries in 2007 and 24 in both 2005 and 2006.

### **Airbus A350 \***

The A350 XWB starts to deliver in 2013. At the end of August the backlog was 493. Production rate information is still not expected for some time but will probably be in the region of about 70 each year for the first few years of production. The delivery mix will probably favour the A350-900 which has a backlog of 236 at present, considerably more than the A350-800 and the A350-1000.

### **Airbus A380 \***

The backlog at the end of August was 182 and there have been five deliveries so far - one per month for the last five months. There were no deliveries in the first three months of this year. There were 12 deliveries last year, three in December. Last year was the first full year of production. In early May Airbus announced a production rate revision. There will be 14 deliveries this year and the planned total for next year is 20 aircraft.

### **Boeing \***

The production guidance for this year is for between 480 and 485 aircraft deliveries. The company has delivered 307 aircraft so far this year and had a backlog of 3,477 aircraft at the end of August. In April this year Boeing announced that twin-aisle aircraft production plans for 2010 were being revised down. Monthly production of the 777 will drop from seven to five aircraft per month beginning in June 2010. Plans to modestly increase 747-8 and 767 production will be delayed. No change has been made to the 737 production rate.

### **Boeing 737 \***

There have been 237 deliveries so far this year with 182 737-800s and 34 737-700s. The 737-800 has delivered 11 fewer aircraft so far than in the whole of last year. The 737-700 delivered 66 aircraft last year. The backlog at the end of August was 2,151 of which 1,420 were 737-800s.

There were 290 deliveries last year, including six BBJs. The projected delivery figure for this year is for a total of 360 deliveries, including BBJs. This will probably be made up of about 40 737-700s, 295 737-800s and 25 737-900ERs.

### **Boeing Business Jets \***

There were six BBJ deliveries last year and six deliveries have been anticipated this year though there have only been two so far, both in February. (There were 11 BBJ deliveries in 2006 and five in 2007.) Remaining deliveries will probably all be in the final quarter but it is also possible that most of the deliveries planned for this year have been deferred. The backlog at the end of August was 20 737-700s, four 737-800s and seven 737-900s.

### **Boeing 747 \***

Earlier this year Boeing revised production of the 747-8. Delivery of the first 747-8 Freighter (see below) will move from late 2009 to the third quarter of 2010. The first 747-8 Intercontinental passenger jet delivery moves from late 2010 to the second quarter of 2011. There were 14 747-400 freighter deliveries last year (six -400ERFs and eight -400Fs). There have been six deliveries this year (four 747-400ERFs and two 747-400Fs) and there should be a total of eight deliveries in total though there have been no deliveries since May.

The last two 747-400ERFs on backlog at the end of August are already in production.

The backlog at the end of August was two 747-400ERFs, 27 747-8s and 78 747-8Fs.

### **Boeing 747-8F \***

In July Boeing announced that they had taken a major step closer to completing the assembly of the first 747-8F as the forward and aft sections were joined to the wing and centre section. The new aircraft is 5.6 m longer than the 747-400F. Delivery of the first aircraft was to have been later this year but was recently moved to the Third Quarter of 2010. The backlog at the end of August was 78.

### **Boeing 767 \***

Boeing has delivered eight 767s so far (five 767-300ERs and two 767-300Fs and one 767-400ER). There will be 12 deliveries in total this year. There were 10 deliveries last year; the 767-200ER delivered two and the 767-300ER delivered eight. The backlog at the end of August was 59 made up of 28 767-300ERFs and 31 767-300Fs.

### **Boeing 777 \***

In June next year production of the 777 will drop from seven per month to five per month. No other rate reductions are anticipated before that time. There were 61 deliveries last year against an originally projected 94. So far this year there have been 56 deliveries (31 777-300ERs, 13 777-200LRs, four 777-200ERs and eight 777Fs). The 777-200ER and -200LR have already delivered more aircraft than in the whole of last year. The projected total this year is for 96 deliveries. The backlog at the end of August was 310.

### Boeing 787 \*

In late July there was a further revision to the 787 schedule. Boeing announced that the first flight of the 787 is now expected by the end of this year and the first delivery is now expected in the Fourth Quarter of 2010. The company statement says that the new schedule “reflects the previously announced need to reinforce an area within the side-of-body section of the aircraft, along with the addition of several weeks of schedule margin to reduce flight test and certification risk.” In a rare public statement about production rates, Boeing says that it is projecting a rate of 10 aircraft per month in late 2013. This is clearly three years after the first expected delivery. Production will probably start at around three per month initially with around 40 deliveries in 2011, the first full year of deliveries. 2012 might see that rate doubling before moving up to the 10 per month rate towards the end of the fourth quarter of 2013.

### Regional Aircraft Production.

Aircraft	Delivered in 2004	Delivered in 2005	Delivered in 2006.	Delivered in 2007	Delivered in 2008	2009 Projected
ATR 42-500	5	5	8	7	6	6
ATR 72-500	8	10	16	37	49	46
Bombardier CRJ200	75	35	5			
Bombardier CRJ440	33	12				
Bombardier CRJ700	52	64	26	5	4	16
Bombardier CRJ900	15	14	40	48	56	54
Bombardier CRJ1000						2
Bombardier Challenger 800		5	8	12	17	20
Bombardier Q200	1	1	1	3	4	1
Bombardier Q300	8	9	16	15	8	6
Bombardier Q400	10	18	31	38	47	52
Embraer 190		12	40	70	78	80
Embraer 195			3	10	14	16
Embraer ERJ 135/145	88	48	12	8	3	4
Embraer 170	46	46	32	11	9	20
Embraer 175		14	11	34	56	14
Embraer Legacy	13	20	17	36	36	20
Embraer EMB 145		1				
<b>Total Regional Aircraft</b>	<b>354</b>	<b>314</b>	<b>266</b>	<b>322</b>	<b>387</b>	<b>345</b>

### ATR

In June ATR announced that it had revised its production forecast for this year down to just over 50 aircraft. Originally the company had said that there would be 64 aircraft deliveries this year with eight of these being ATR42-500s. ATR delivered six ATR42s and 49 ATR72s last year. In 2007 the company delivered seven ATR42-500s and 37 ATR72-500s. Earlier in the year the company said that the rate from 2009 would be 80 aircraft per year but that rate has been revised down. ATR has had orders for 28 new aircraft so far this year but there have also been nine cancellations since January.

The first flight of the -600 series is still scheduled for this year and the -600 will enter service in 2011.

### Bombardier Aerospace

Bombardier delivered 353 aircraft in the fiscal year to the end of January 2009. This number is made up of 239 business aircraft, 110 commercial aircraft and four amphibious aircraft. In the current fiscal year the company expects to deliver about 10 percent fewer business aircraft and about 10 percent more commercial aircraft. The Learjet and Challenger production rates are being reduced but the rate for the Q400 is being increased. Of the 110 commercial aircraft delivered last year, 56 were CRJ Series aircraft and 54 were Q-Series aircraft. The rate for the CRJ Series this fiscal year (ending Jan 31, 2010) remains unchanged.

### Bombardier Business Jets \*

In the First Quarter of this year, Bombardier delivered 17 Learjets, 26 Challengers and 10 Global Series. In the Second Quarter the company delivered 10 Learjets, 19 Challengers and 21 Global Series.

Bombardier Aerospace's official figures are for the fiscal year to the end of January each year. In the last fiscal year the company delivered 70 Learjet aircraft, 116 Challenger aircraft and 53 Global Series. In the previous fiscal year the figures were 81 Learjets, 103 Challengers and 48 Global series. The totals are 239 in the latest fiscal year and 232 in the previous fiscal year.

### **Bombardier CRJ700 \***

Bombardier has delivered 10 CRJ 700 Series 701 aircraft so far this year, eight of which were delivered in the three months to the end of July. It had been thought that there would only be around three deliveries this year but the total for 2009 will now be in the region of 16. There were four deliveries last year, five in 2007 and 26 in 2006. The backlog at the end of July was 36.

### **Bombardier CRJ900 \***

There have been 27 CRJ900 deliveries so far this year. There were 56 deliveries last year. Bombardier say that the production rate for this year will be the same as last year. The backlog at the end of July was 31. There were 55 deliveries in 2007 and 40 in 2006.

### **Bombardier CRJ1000 \***

The backlog at the end of July was 49 or five more than at the end of April. Bombardier recently cancelled the My Way order for 15 and Adria Airways cancelled the CRJ1000 it had on order earlier this year. There are now just two customers for this aircraft. Air Nostrum has 35 on order and Brit Air has 14. Deliveries begin in the Fourth Quarter of 2009 and it is thought that there will be two deliveries this year.

### **Bombardier CSeries \***

The CSeries enters revenue service in 2013. Production rate details have yet to be announced. There are two customers for this aircraft; Deutsche Lufthansa with 30 firm and 30 options for the CS100, and Lease Corporation International Aviation (New Buildings) Ltd has three firm CS100 orders and 17 firm CS300 orders, plus an additional 20 options.

In March, the 110-seat configuration, previously known as the C110, was designated the CSeries model CS100 and the 130-seat configuration, formerly the C130, was designated the CSeries model CS300.

### **Bombardier Q Series \***

The Q Series had a backlog of 106 aircraft at the end of July and all but one of these were Q400s. The other one is a Q300. Bombardier delivered the last Q200 in January and has also delivered five Q300s and 33 Q400s this year. Bombardier has said that the rate for the Q-400 will be increased this year and we expect about 52 deliveries. The company may also deliver the last Q-300s on backlog this year.

### **COMAC ARJ21**

There will be 12 deliveries next year. The Commercial Aircraft Corporation of China (COMAC) has orders for 206 ARJ21s. First deliveries of the ARJ21-700, to Shandong Airlines, were originally scheduled for September 2009 but will now start in the first Quarter of 2010.

### **Embraer**

In the Second Quarter, Embraer delivered a total of 56 aircraft, made up of 35 commercial aircraft, 19 executive jets and two that went to the defence sector. The company delivered 40 aircraft in the First Quarter made up of 32 commercial aircraft and eight executive jets. At the end of June the company's firm order backlog was 340 aircraft, down from 426 at the start of the year and 393 at the end of March. The backlog at the end of June was worth \$19.8 billion. In addition to the firm orders, Embraer also has 819 options (842 at the end of March) made up of 25 for the ERJ 145 and 819 for the 170/190 Family). Embraer plans to deliver 242 commercial and executive jets this year. No specific breakdown of deliveries has been given but the original plan was to deliver around 200 commercial jets this year and an additional 120-150 Phenom jets. (The new MSJ and MLJ executive jets only enter service in the second half of 2012 and 2013 respectively.) It is thought that there will be a reduction in commercial jet deliveries this year and that only around 50 Phenoms will be delivered. The company delivered 204 aircraft last year, including two Phenom 100s and two Legacy 600s.

### **Embraer ERJ 145**

There were six deliveries last year, plus one for government service. So far this year two aircraft have been delivered. The backlog at the end of June was 12 with 25 options. At the end of March it was 39 with 50 options. Hainan Airlines of China is the sole customer. Four deliveries are expected this year.

### **Embraer 170**

At the end of December the backlog was 45 aircraft with 93 options but by the end of March this had changed to 40 firm and 84 options. The current figure, at the end of June, is a backlog of 33 with 91 options. There were five deliveries in the First Quarter and seven in the Second Quarter. The projection for this year is for 20 deliveries, or 11 more than last year. There were 11 deliveries in 2007.

### **Embraer 175**

The projection for this year is for 14 deliveries and there have been three in each Quarter so far this year. There were 11 deliveries in 2006, 34 in 2007 and 55 last year (plus one executive version). The backlog at the end of the year was 20 with an additional 173 options. By the end of March the firm order backlog had dropped to 18 and there were still 173 options. At the end of June the backlog was 15 with 173 options.

### **Embraer 190**

There have been 33 deliveries this year with 16 in the Second Quarter. We expect a total of about 80 deliveries this year. There were 78 deliveries last year and the year-end backlog was 237 with 466 options. At the end of March the firm backlog was 218 with an additional 459 options but by the end of June the backlog had dropped to 209 with 454 options.

### **Embraer 195**

There have been 13 deliveries so far this year, seven in the Second Quarter. There were 14 deliveries last year. The backlog at the end of June was 71 with 76 options. At the start of this year the backlog was 84 with 78 options. We expect about 22 deliveries this year.

### **Embraer Phenom**

There were two Phenom 100 deliveries last year and there have been 19 commercial segment deliveries so far this year with 13 in Q2. There were two deliveries to the defence segment in Q2 as well. The combined production of the Phenom 100 and Phenom 300 in 2009 was originally going to be between 120 and 150 aircraft. It is thought that the rate will now be about 50 aircraft.

### **Embraer Legacy 600**

There were 36 deliveries last year including three to government agencies. In 2007 there were also 36 deliveries, including one to government agencies. There were two deliveries in the First Quarter and five in Q2. The projection for 2009 was for about 36 deliveries but considering the low level of demand for executive jets, this may be optimistic.

### **Embraer Lineage 1000**

The projection for this year is for three or possibly four deliveries. There was one delivery in the Second Quarter which was the first this year.

### **Embraer MSJ and MLJ**

In April 2007 Embraer announced two new executive jet programs; the midsize Embraer MSJ with a 5,560km range and the midlight Embraer MLJ which has a range of 4,260km. Both aircraft will be powered by twin Honeywell HTF7500E engines. The MSJ will enter service in the second half of 2012 and the MLJ will enter service in the second half of 2013.

### **Gulfstream Aerospace**

Gulfstream Aerospace is reducing the production rate of large-cabin aircraft from a projected rate of 94 to 73 this year. Gulfstream will also reduce production of its mid-size aircraft from a projected rate of 30 to 24 aircraft. In a statement on March 5, General Dynamics said that the cuts were a result of deterioration in the backlog, particularly during the month of February, and continued weak demand. The company says that it is taking these measures in an effort to both stabilize its backlog of aircraft orders and level-load production over 2009 and 2010. This action will result in a reduction of 1,200 workers, including approximately 550 contractor personnel.

### **Sukhoi Superjet 100 \***

At the end of July the Superjet 100 had a firm order backlog of 122 aircraft. In late July the third prototype flew for the first time. This was the first aircraft with a fully-fitted passenger cabin and avionics. One of the test aircraft (SN95003) has now completed high altitude flight testing in Armenia. During September tests were conducted at the Shirak Airport at Gyumri which is at 5,000ft. Production rate information is not yet available.

## Engine Order Books :

### The Firm Jet Engine Order Book on August 31, 2009 :

#### CFM International.

#### Firm Engine Order Totals.

	Total on Order Mar 31 2007	Total on Order June 30 2007	Total on Order Sep 30 2007	Total on Order Dec 31 2007	Total on Order Mar 31 2008	Total on Order June 30 2008	Total on Order Sep 30 2008	Total on Order Dec 31 2008	Total on Order Mar 31 2009	Total on Order June 30 2009	Total on Order Aug 31 2009
CFM56-5	1,874	2,232	2,332	2,362	2,384	2,324	2,456	2,170	2,072	1,974	1,922
CFM56-7	3,030	3,260	3,592	4,152	4,350	4,486	4,584	4,540	4,406	4,274	4,302
<b>Total</b>	<b>4,904</b>	<b>5,492</b>	<b>5,924</b>	<b>6,514</b>	<b>6,734</b>	<b>6,810</b>	<b>7,040</b>	<b>6,710</b>	<b>6,478</b>	<b>6,248</b>	<b>6,244</b>

#### CFM56-5

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
B H Airlines	A319	CFM56-5A	4	4	4	4
Northwest Airlines	A319	CFM56-5A4	10	10	10	10
Airbus Exec Jets	A318	CFM56-5B	30	28	26	26
British Airways	A318	CFM56-5B	4	4	4	2
Aerventure	A319	CFM56-5B	12	8	8	8
Afriqiyah Airlines	A319	CFM56-5B	2	2	2	0
Aigle Azur	A319	CFM56-5B	0	0	2	2
Air Berlin	A319	CFM56-5B	2	2	0	0
Atlantic Airways	A319	CFM56-5B	0	0	2	2
Avianca	A319	CFM56-5B	28	28	28	28
Aviation Capital Grp.	A319	CFM56-5B	10	10	10	10
BOC Aviation	A319	CFM56-5B	10	8	4	2
China Southern	A319	CFM56-5B	16	14	8	6
CIT Leasing Corp.	A319	CFM56-5B	10	10	10	10
Croatia Airlines	A319	CFM56-5B	8	8	8	8
EasyJet	A319	CFM56-5B	150	130	126	126
GECAS	A319	CFM56-5B	24	22	22	22
Germanwings	A319	CFM56-5B	12	8	8	8
Hamburg International	A319	CFM56-5B	14	12	4	4
ILFC	A319	CFM56-5B	12	8	4	4
Indian Airlines	A319	CFM56-5B	20	18	14	10
JAT - Jugoslovenski	A319	CFM56-5B	16	16	16	16
Lufthansa	A319	CFM56-5B	22	22	22	22
National Air Services	A319	CFM56-5B	40	40	40	40
RBS Aerospace	A319	CFM56-5B	2	2	0	0
Afriqiyah Airlines	A320	CFM56-5B	18	18	18	18
Air Arabia	A320	CFM56-5B	88	88	88	88
Air France	A320	CFM56-5B	22	20	22	22
AirBlue	A320	CFM56-5B	28	28	28	28
Avianca	A320	CFM56-5B	60	60	60	50
Aviation Capital Grp.	A320	CFM56-5B	40	40	40	40
AWAS	A320	CFM56-5B	90	90	90	90
Cebu Pacific	A320	CFM56-5B	20	20	30	30
China Southern	A320	CFM56-5B	50	50	46	40
East Star Airlines	A320	CFM56-5B	12	12	0	0

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
EasyJet	A320	CFM56-5B	50	48	34	22
GECAS	A320	CFM56-5B	96	84	74	74
Go Air	A320	CFM56-5B	32	28	24	24
Gulf Air	A320	CFM56-5B	30	30	30	30
Hamburg International	A320	CFM56-5B	8	8	8	8
Juneyao Airlines	A320	CFM56-5B	12	12	12	10
Libyan Airlines	A320	CFM56-5B	14	14	14	14
Nouvelair	A320	CFM56-5B	4	4	4	4
S7 Airlines	A320	CFM56-5B	50	50	50	50
Saudi Arabian Airlines	A320	CFM56-5B	44	44	44	44
Spring Airlines	A320	CFM56-5B	12	10	10	10
Swiss International	A320	CFM56-5B	4	4	4	4
Tunis Air	A320	CFM56-5B	20	20	20	20
Ural Airlines	A320	CFM56-5B	14	14	14	14
Uzbekistan Airways	A320	CFM56-5B	20	20	20	20
Aeroflot	A321	CFM56-5B	32	32	32	32
Air Berlin	A321	CFM56-5B	0	0	0	2
Air France	A321	CFM56-5B	14	12	10	10
Aviation Capital Grp.	A321	CFM56-5B	10	10	10	10
CIT Leasing	A321	CFM56-5B	6	6	0	0
ILFC	A321	CFM56-5B	6	6	10	10
Indian Airlines	A321	CFM56-5B	20	16	14	10
NIKI	A321	CFM56-5B	2	0	0	0
Aer Lingus	A320	CFM56-5B4	8	8	8	8
Aerventure	A320	CFM56-5B4	30	16	10	18
Air Berlin	A320	CFM56-5B4	52	50	48	44
AirAsia	A320	CFM56-5B4	238	232	230	226
Airbus Exec Jets	A320	CFM56-5B4	8	8	10	10
Alafco	A320	CFM56-5B4	48	44	38	34
CIT Leasing Corp.	A320	CFM56-5B4	18	12	10	10
Frontier Airlines	A320	CFM56-5B4	16	16	16	16
Iberia	A320	CFM56-5B4	24	24	20	20
ILFC	A320	CFM56-5B4	4	0	8	8
Indian Airlines	A320	CFM56-5B4	8	8	8	8
Interjet	A320	CFM56-5B4	24	24	24	24
Jazeera Airways	A320	CFM56-5B4	64	64	60	60
Lufthansa	A320	CFM56-5B4	28	28	28	28
NIKI	A320	CFM56-5B4	22	22	22	22
Northwest Airlines	A320	CFM56-5B4	4	4	4	4
Philippine Airlines	A320	CFM56-5B4	4	4	4	4
RBS Aerospace	A320	CFM56-5B4	4	0	0	0
South African Airways	A320	CFM56-5B4	30	30	30	30
Virgin America	A320	CFM56-5B4	8	8	8	8
CSA Czech Airlines	A319	CFM56-5B6/P	16	16	16	16
Aircraft Purchase Fleet	A320	CFM56-5B6/P	88	106	98	96
Airbus Exec Jets	A319	CFM56-5B7	38	36	32	30
<b>Total</b>			<b>2,170</b>	<b>2,072</b>	<b>1,974</b>	<b>1,922</b>

### CFM56-7B

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Aeromexico	737-700	CFM56-7B	20	20	20	20
Air Berlin	737-700	CFM56-7B	44	40	40	40
AirTran	737-700	CFM56-7B	110	110	106	106

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
All Nippon Airways	737-700	CFM56-7B	30	30	30	30
Aviation Capital Grp	737-700	CFM56-7B	128	128	128	128
BOC Aviation	737-700	CFM56-7B	10	16	22	20
China Eastern Airlines	737-700	CFM56-7B	22	22	18	14
China Southern	737-700	CFM56-7B	56	56	56	52
CIT Leasing Corp.	737-700	CFM56-7B	30	30	30	28
Continental Airlines	737-700	CFM56-7B	74	74	64	56
DAE	737-700	CFM56-7B	140	140	136	136
Delta Air Lines	737-700	CFM56-7B	10	6	6	6
GOL Airlines	737-700	CFM56-7B	2	2	2	2
ILFC	737-700	CFM56-7B	20	20	20	20
Integrated Defence	737-700	CFM56-7B	8	6	6	6
KLM	737-700	CFM56-7B	20	18	18	18
Scandinavian Airline	737-700	CFM56-7B	0	2	4	4
Shanghai Airlines	737-700	CFM56-7B	6	6	6	6
SkyEurope	737-700	CFM56-7B	20	20	20	14
Southwest	737-700	CFM56-7B	198	202	186	182
TUI	737-700	CFM56-7B	30	28	28	12
Turkmenistan Airlines	737-700	CFM56-7B	0	0	0	4
Unidentified	737-700	CFM56-7B	46	46	52	66
WestJet	737-700	CFM56-7B	48	48	48	76
Boeing Business Jet	737-700BBJ	CFM56-7B	44	42	40	40
Aerosvit	737-800	CFM56-7B	14	14	14	14
Air Berlin	737-800	CFM56-7B	116	112	112	112
Air China	737-800	CFM56-7B	92	88	84	82
Air Europa	737-800	CFM56-7B	56	56	50	50
Air India	737-800	CFM56-7B	10	8	6	4
Alafco	737-800	CFM56-7B	12	12	12	12
Alaska Airlines	737-800	CFM56-7B	40	30	30	30
All Nippon Airways	737-800	CFM56-7B	18	16	12	12
American Airlines	737-800	CFM56-7B	174	170	172	160
Arik Air	737-800	CFM56-7B	28	28	28	28
Atlant-Soyuz	737-800	CFM56-7B	8	8	8	8
Aviation Capital Grp.	737-800	CFM56-7B	12	12	12	10
AWAS	737-800	CFM56-7B	66	66	66	66
Babcock & Brown	737-800	CFM56-7B	40	40	40	40
Biman Bangladesh	737-800	CFM56-7B	4	4	4	4
Blue Air	737-800	CFM56-7B	4	4	4	4
BOC Aviation	737-800	CFM56-7B	50	44	36	34
Buraq Air	737-800	CFM56-7B	2	2	2	2
China Eastern Airlines	737-800	CFM56-7B	12	10	10	8
China Southern	737-800	CFM56-7B	74	74	70	68
CIT Leasing Corp.	737-800	CFM56-7B	0	0	0	2
Continental Airlines	737-800	CFM56-7B	0	8	18	22
COPA Airlines	737-800	CFM56-7B	26	24	24	50
DAE	737-800	CFM56-7B	0	0	4	4
Delta Air Lines	737-800	CFM56-7B	66	66	58	56
Egyptair	737-800	CFM56-7B	14	10	10	24
FlyDubai	737-800	CFM56-7B	100	100	96	92
Garuda Indonesia	737-800	CFM56-7B	50	50	48	48
GECAS	737-800	CFM56-7B	190	172	160	154
GOL Airlines	737-800	CFM56-7B	186	182	176	174
Government of Iraq	737-800	CFM56-7B	60	60	60	60
Hainan Airlines	737-800	CFM56-7B	40	32	26	24
ILFC	737-800	CFM56-7B	24	10	2	0
JAL International	737-800	CFM56-7B	38	34	32	28
JeJu Air	737-800	CFM56-7B	10	10	10	10
Jet Airways	737-800	CFM56-7B	40	40	40	40
Jet Lite	737-800	CFM56-7B	20	20	20	20
Malaysia Airlines	737-800	CFM56-7B	70	70	70	70
MCAP	737-800	CFM56-7B	0	0	4	4
Norwegian Air Shuttle	737-800	CFM56-7B	84	84	84	82
Oman Air	737-800	CFM56-7B	12	12	12	12

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Pegasus Airlines	737-800	CFM56-7B	18	16	14	12
Qantas	737-800	CFM56-7B	62	62	62	62
RAK Airways	737-800	CFM56-7B	8	8	8	8
Royal Air Maroc	737-800	CFM56-7B	18	18	14	14
Ryanair	737-800	CFM56-7B	286	268	232	226
S7 Group	737-800	CFM56-7B	20	20	20	20
Saga Airlines	737-800	CFM56-7B	4	4	4	4
Scandinavian Airline	737-800	CFM56-7B	8	6	2	0
Shandong Airlines	737-800	CFM56-7B	14	12	8	4
Shanghai Airlines	737-800	CFM56-7B	10	10	8	8
Shenzhen Airlines	737-800	CFM56-7B	10	8	4	2
SpiceJet	737-800	CFM56-7B	22	18	18	18
SunExpress	737-800	CFM56-7B	0	0	0	12
Transavia Airlines	737-800	CFM56-7B	14	14	12	12
Travel Service	737-800	CFM56-7B	4	4	4	4
TUI	737-800	CFM56-7B	42	36	32	48
U.S. Navy	737-800	CFM56-7B	10	10	8	8
Unidentified	737-800	CFM56-7B	458	470	492	518
Virgin Blue Airlines	737-800	CFM56-7B	38	38	48	48
Xiamen Airlines	737-800	CFM56-7B	84	84	82	80
Boeing Business Jet	737-800BBJ	CFM56-7B	10	8	8	8
Boeing Business Jet	737-900BBJ	CFM56-7B	16	14	14	14
Arik Air	737-900ER	CFM56-7B	6	6	6	6
Azerbaijan Airlines	737-900ER	CFM56-7B	8	8	8	8
Blue Air	737-900ER	CFM56-7B	6	6	6	6
Continental Airlines	737-900ER	CFM56-7B	34	18	14	10
GECAS	737-900ER	CFM56-7B	4	4	4	4
Korean Air	737-900ER	CFM56-7B	8	8	8	8
Lion Air	737-900ER	CFM56-7B	330	324	316	314
Sky Airlines	737-900ER	CFM56-7B	6	6	2	2
Turkmenistan Airlines	737-900ER	CFM56-7B	4	4	4	4
<b>Total</b>			<b>4,540</b>	<b>4,406</b>	<b>4,274</b>	<b>4,302</b>

## Engine Alliance

### Firm Engine Order Totals.

	Total on Order Mar 31 2007	Total on Order June 30 2007	Total on Order Sep 30 2007	Total on Order Dec 31 2007	Total on Order Mar 31 2008	Total on Order June 30 2008	Total on Order Sep 30 2008	Total on Order Dec 31 2008	Total on Order Mar 31 2009	Total on Order June 30 2009	Total on Order Aug 31 2009
GP7200	272	296	296	340	352	352	348	336	344	380	380
<b>Total</b>	<b>272</b>	<b>296</b>	<b>296</b>	<b>340</b>	<b>352</b>	<b>352</b>	<b>348</b>	<b>336</b>	<b>344</b>	<b>380</b>	<b>380</b>

### GP7200

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Air France	A380	GP7200	48	48	48	48
Etihad Airways	A380	GP7200	0	0	40	40
ILFC	A380	GP7200	40	40	40	40
Korean Air Lines	A380	GP7200	32	40	40	40
Emirates	A380	GP7270	216	216	212	212
<b>Total</b>			<b>336</b>	<b>344</b>	<b>380</b>	<b>380</b>

## GE Aviation.

### Firm Engine Order Totals.

	Total on Order Mar 31 2007	Total on Order June 30 2007	Total on Order Sep 30 2007	Total on Order Dec 31 2007	Total on Order Mar 31 2008	Total on Order June 30 2008	Total on Order Sep 30 2008	Total on Order Dec 31 2008	Total on Order Mar 31 2009	Total on Order June 30 2009	Total on Order Aug 31 2009
GE90	574	608	644	676	684	668	680	664	628	598	592
CF6-80	356	316	288	270	242	242	256	282	262	244	236
GENx	956	998	1,024	1,170	1,126	1,130	1,146	1,176	1,178	1,210	1,210
<b>Total</b>	<b>1,886</b>	<b>1,922</b>	<b>1,956</b>	<b>2,116</b>	<b>2,052</b>	<b>2,040</b>	<b>2,082</b>	<b>2,122</b>	<b>2,068</b>	<b>2,052</b>	<b>2,038</b>

### CF6-80

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
LoadAir Cargo	747-400ERF	CF6-80C2	8	8	8	8
Nippon Cargo Airlines	747-400F	CF6-80C2	4	4	0	0
UPS	747-400F	CF6-80C2	4	0	0	0
Azerbaijan	767-300ER	CF6-80C2	4	4	4	4
JAL International	767-300ER	CF6-80C2	8	4	0	0
LAN Airlines	767-300ER	CF6-80C2	14	14	14	14
Unidentified	767-300ER	CF6-80C2	18	18	18	22
UPS	767-300F	CF6-80C2	54	54	54	52
Boeing Business Jets	767-400ER	CF6-80C2	2	0	0	0
All Nippon Airways	767-300ER	CF6-80C2B6F	20	20	8	8
DHL International	767-300F	CF6-80C2B7F	12	12	12	10
AerCap	A330-200	CF6-80E1	24	18	16	16
Afriqiyah Airlines	A330-200	CF6-80E1	0	0	6	4
Air Mauritius	A330-200	CF6-80E1	2	2	2	2
Airbus Exec Jets	A330-200	CF6-80E1	42	42	46	42
Aircraft Purchase Fleet	A330-200	CF6-80E1	24	24	24	24
ILFC	A330-200	CF6-80E1	0	0	2	0
Jet Airways	A330-200	CF6-80E1	10	10	10	10
KLM	A330-200	CF6-80E1	4	4	4	4
Aer Lingus	A330-300	CF6-80E1	12	10	8	8
Finnair	A330-300	CF6-80E1	16	14	8	8
<b>Total</b>			<b>282</b>	<b>262</b>	<b>244</b>	<b>236</b>

## GE90

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Qatar Airways	777-200LR	GE90-110B1	16	12	12	12
Turkmenistan	777-200LR	GE90-110B1	2	2	2	2
Unidentified	777-200LR	GE90-110B1	8	10	12	12
Air France	777F	GE90-110B1	10	6	6	6
China Southern	777F	GE90-110B1	12	12	12	12
Deucalion Capital V11	777F	GE90-110B1	16	16	14	12
Dubai Aerospace Ent.	777F	GE90-110B1	0	14	12	12
Emirates	777F	GE90-110B1	16	0	0	0
FedEx	777F	GE90-110B1	30	30	30	30
GECAS	777F	GE90-110B1	20	16	12	12
Guggenheim Aviation	777F	GE90-110B1	10	10	10	10
Korean Air	777F	GE90-110B1	10	10	10	10
LAN Airlines	777F	GE90-110B1	4	4	2	2
Oak Hill	777F	GE90-110B1	12	12	12	12
Qatar Airways	777F	GE90-110B1	4	4	6	6
Unidentified	777F	GE90-110B1	2	2	2	2
Continental Airlines	777-200ER	GE90-115B	16	16	14	10
Air India	777-200LR	GE90-115B	6	6	4	0
Delta Air Lines	777-200LR	GE90-115B	16	10	4	4
Emirates	777-200LR	GE90-115B	4	0	0	0
Ethiopian Airlines	777-200LR	GE90-115B	0	0	0	10
Air Canada	777-300ER	GE90-115B	2	0	0	0
Air China	777-300ER	GE90-115B	30	30	30	30
Air France	777-300ER	GE90-115B	34	34	26	26
Air India	777-300ER	GE90-115B	20	20	20	14
Air New Zealand	777-300ER	GE90-115B	8	10	10	10
All Nippon Airways	777-300ER	GE90-115B	8	8	8	8
Arik Air	777-300ER	GE90-115B	10	10	10	10
Biman Bangladesh	777-300ER	GE90-115B	8	8	8	8
Cathay Pacific	777-300ER	GE90-115B	42	40	38	38
Dubai Aerospace Ent.	777-300ER	GE90-115B	20	20	20	20
Egyptair	777-300ER	GE90-115B	4	4	4	0
Emirates	777-300ER	GE90-115B	58	58	54	50
Ethihad Airways	777-300ER	GE90-115B	20	20	20	20
EVA Air	777-300ER	GE90-115B	8	6	6	6
Garuda Indonesia	777-300ER	GE90-115B	20	20	20	20
GECAS	777-300ER	GE90-115B	28	24	24	24
Guggenheim Aviation	777-300ER	GE90-115B	2	2	2	2
ILFC	777-300ER	GE90-115B	8	6	2	0
JAL International	777-300ER	GE90-115B	16	16	16	16
Jet Airways	777-300ER	GE90-115B	6	6	6	6
KLM	777-300ER	GE90-115B	8	8	6	4
Korean Air	777-300ER	GE90-115B	22	22	20	18
Philippine Airlines	777-300ER	GE90-115B	8	8	8	8
Singapore Airlines	777-300ER	GE90-115B	2	0	0	0
TAM	777-300ER	GE90-115B	8	8	8	8
Turkish Airlines	777-300ER	GE90-115B	0	0	10	24
Virgin Australia	777-300ER	GE90-115B	12	8	8	8
British Airways	777-300ER	GE90-115B1	4	4	4	4
Qatar Airways	777-300ER	GE90-115B1	24	22	20	20
Unidentified	777-300ER	GE90-115B1	10	14	14	14
<b>Total</b>			<b>664</b>	<b>628</b>	<b>598</b>	<b>592</b>

## GE<sub>nx</sub>

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
JAL International	787-3	GE <sub>nx</sub> -1B	26	26	0	0
Aeromexico	787-8	GE <sub>nx</sub> -1B	4	4	4	4
Air Canada	787-8	GE <sub>nx</sub> -1B	74	74	74	74
Air India	787-8	GE <sub>nx</sub> -1B	54	54	54	54
Alafco	787-8	GE <sub>nx</sub> -1B	44	44	44	44
Azerbaijan Airlines	787-8	GE <sub>nx</sub> -1B	4	4	4	4
Boeing Business Jet	787-8	GE <sub>nx</sub> -1B	2	4	4	4
China Eastern Airlines	787-8	GE <sub>nx</sub> -1B	30	30	30	30
China Southern	787-8	GE <sub>nx</sub> -1B	20	20	20	20
Continental Airlines	787-8	GE <sub>nx</sub> -1B	16	16	22	22
Ethiopian Airlines	787-8	GE <sub>nx</sub> -1B	16	16	16	20
Hainan Airlines	787-8	GE <sub>nx</sub> -1B	16	16	16	16
ILFC	787-8	GE <sub>nx</sub> -1B	20	20	20	20
JAL International	787-8	GE <sub>nx</sub> -1B	44	44	70	70
Korean Air	787-8	GE <sub>nx</sub> -1B	20	20	20	20
Qantas	787-8	GE <sub>nx</sub> -1B	30	30	30	30
Qatar Airways	787-8	GE <sub>nx</sub> -1B	60	60	60	60
Royal Air Maroc	787-8	GE <sub>nx</sub> -1B	8	8	8	8
Royal Jordanian	787-8	GE <sub>nx</sub> -1B	8	8	8	8
Shanghai Airlines	787-8	GE <sub>nx</sub> -1B	18	18	18	18
Thomson Airways	787-8	GE <sub>nx</sub> -1B	24	24	24	24
Unidentified	787-8	GE <sub>nx</sub> -1B	4	4	0	0
Uzbekistan Airways	787-8	GE <sub>nx</sub> -1B	4	4	4	4
Air Pacific	787-9	GE <sub>nx</sub> -1B	16	16	16	16
Arik Air	787-9	GE <sub>nx</sub> -1B	14	14	14	14
Boeing Business Jet	787-9	GE <sub>nx</sub> -1B	4	4	4	4
Continental Airlines	787-9	GE <sub>nx</sub> -1B	34	34	28	28
Ethiopian Airlines	787-9	GE <sub>nx</sub> -1B	4	4	4	0
Etiihad Airways	787-9	GE <sub>nx</sub> -1B	0	0	70	70
Qantas	787-9	GE <sub>nx</sub> -1B	100	100	70	70
Unidentified	787-9	GE <sub>nx</sub> -1B	30	30	30	30
CIT Leasing Corp	787-8	GE <sub>nx</sub> -1B64	4	4	4	4
Boeing Business Jet	747-8	GE <sub>nx</sub> -2B	32	32	28	28
Lufthansa	747-8	GE <sub>nx</sub> -2B	80	80	80	80
Atlas Air	747-8F	GE <sub>nx</sub> -2B	48	48	48	48
Cathay Pacific	747-8F	GE <sub>nx</sub> -2B	40	40	40	40
DAE	747-8F	GE <sub>nx</sub> -2B	20	60	60	60
Emirates SkyCargo	747-8F	GE <sub>nx</sub> -2B	40	0	0	0
Guggenheim Aviation	747-8F	GE <sub>nx</sub> -2B	16	16	16	16
Korean Air	747-8F	GE <sub>nx</sub> -2B	20	20	20	20
Volga-Dnepr	747-8F	GE <sub>nx</sub> -2B	20	20	20	20
Cargolux Airlines	747-8F	GE <sub>nx</sub> -2B67	52	52	52	52
Nippon Cargo Airlines	747-8F	GE <sub>nx</sub> -2B67	56	56	56	56
<b>Total</b>			<b>1,176</b>	<b>1,178</b>	<b>1,210</b>	<b>1,210</b>

## International Aero Engines.

### Firm Engine Order Totals.

	Total on Order Mar 31 2007	Total on Order June 30 2007	Total on Order Sep 30 2007	Total on Order Dec 31 2007	Total on Order Mar 31 2008	Total on Order June 30 2008	Total on Order Sep 30 2008	Total on Order Dec 31 2008	Total on Order Mar 31 2009	Total on Order June 30 2009	Total on Order Aug 31 2009
V2500-A5	1,518	1,674	1,824	2,284	2,328	2,250	2,324	2,390	2,298	2,306	2,352
<b>Total</b>	<b>1,518</b>	<b>1,674</b>	<b>1,824</b>	<b>2,284</b>	<b>2,328</b>	<b>2,250</b>	<b>2,324</b>	<b>2,390</b>	<b>2,298</b>	<b>2,306</b>	<b>2,352</b>

### V2500-A5

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
United Air Lines	A319	V2522-A5	46	46	46	46
Aerventure	A319	V2524-A5	10	4	4	4
Airbus Exec Jets	A319	V2524-A5	14	14	14	14
Aviation Capital Grp.	A319	V2524-A5	10	10	10	10
CIT Leasing Corp.	A319	V2524-A5	10	6	6	6
Hainan	A319	V2524-A5	30	26	24	22
ILFC	A319	V2524-A5	4	0	0	0
LAN Airlines	A319	V2524-A5	18	12	12	12
Sichuan Airlines	A319	V2524-A5	8	8	8	4
Silkair	A319	V2524-A5	8	8	8	8
Spirit Airlines	A319	V2524-A5	34	34	34	26
TACA	A319	V2524-A5	8	8	10	10
TAM	A319	V2524-A5	18	18	18	16
US Airways	A319	V2524-A5	18	18	18	16
Volaris	A319	V2524-A5	36	36	36	36
Aegean Airlines	A320	V2527-A5	22	14	12	12
Aerventure	A320	V2527-A5	42	36	36	36
Air China	A320	V2527-A5	44	44	44	44
Alpstream	A320	V2527-A5	32	32	32	32
Aviation Capital Grp.	A320	V2527-A5	40	40	40	40
AWAS	A320	V2527-A5	60	60	60	60
BOC Aviation	A320	V2527-A5	62	62	62	62
British Airways	A320	V2527-A5	20	20	18	18
China Eastern Airlines	A320	V2527-A5	68	66	62	60
CIT Leasing Corp.	A320	V2527-A5	70	70	70	70
Etihad Airways	A320	V2527-A5	40	40	40	40
GB Airways	A320	V2527-A5	2	2	2	2
Hainan	A320	V2527-A5	26	26	26	26
IndiGo	A320	V2527-A5	94	92	88	86
Israil	A320	V2527-A5	0	0	6	6
JetBlue Airways	A320	V2527-A5	116	110	110	110
Kingfisher Airlines	A320	V2527-A5	48	48	48	48
Kingfisher Red	A320	V2527-A5	92	92	90	90
LAN Airlines	A320	V2527-A5	18	18	18	18
Mandala Airlines	A320	V2527-A5	50	50	50	50
Mexicana	A320	V2527-A5	8	8	8	8
Middle East Airlines	A320	V2527-A5	12	8	6	6
Qantas	A320	V2527-A5	100	100	100	100
Qatar Airways	A320	V2527-A5	0	0	40	40
RBS Aerospace	A320	V2527-A5	10	8	0	0
Shenzhen	A320	V2527-A5	80	78	68	64

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Sichuan Airlines	A320	V2527-A5	20	20	20	20
Silkair	A320	V2527-A5	14	12	12	12
Spirit Airlines	A320	V2527-A5	40	40	40	40
TACA	A320	V2527-A5	28	28	26	26
TAM	A320	V2527-A5	64	64	62	60
Tiger Airways	A320	V2527-A5	114	112	112	110
United Air Lines	A320	V2527-A5	38	38	38	38
US Airways	A320	V2527-A5	102	102	102	104
Wizz Air	A320	V2527-A5	142	138	132	230
Alpstream	A321	V2527-A5	8	8	8	8
US Airways	A321	V2527-A5	64	60	50	42
Air China	A321	V2530-A5	34	30	28	26
bmi british midland	A321	V2530-A5	8	8	8	6
China Southern	A321	V2530-A5	52	46	36	34
GB Airways	A321	V2530-A5	2	2	2	2
ILFC	A321	V2530-A5	6	4	0	0
Indigo	A321	V2530-A5	60	60	60	60
Kingfisher Airlines	A321	V2530-A5	8	0	0	0
Kingfisher Red	A321	V2530-A5	2	2	2	2
Lufthansa	A321	V2530-A5	56	56	52	46
Qatar Airways	A321	V2530-A5	0	0	8	8
Shanghai Airlines	A321	V2530-A5	20	20	20	18
Sichuan	A321	V2530-A5	14	14	12	10
TACA	A321	V2530-A5	2	2	0	0
TAM	A321	V2530-A5	22	18	18	18
Vietnam Airlines	A321	V2530-A5	22	22	54	54
Vietnam ALC	A321	V2530-A5	20	20	20	20
<b>Total</b>			<b>2,390</b>	<b>2,298</b>	<b>2,306</b>	<b>2,352</b>

## Pratt & Whitney.

### Firm Engine Order Totals.

	Total on Order Mar 31 2007	Total on Order June 30 2007	Total on Order Sep 30 2007	Total on Order Dec 31 2007	Total on Order Mar 31 2008	Total on Order June 30 2008	Total on Order Sep 30 2008	Total on Order Dec 31 2008	Total on Order Mar 31 2009	Total on Order June 30 2009	Total on Order Aug 31 2009
PW4000	146	152	184	212	192	182	212	204	200	184	178
PW6000	70	68	66	60	32	16	10	6	0	0	0
<b>Total</b>	<b>216</b>	<b>220</b>	<b>250</b>	<b>272</b>	<b>224</b>	<b>198</b>	<b>222</b>	<b>210</b>	<b>200</b>	<b>184</b>	<b>178</b>

### PW4000

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Uzbekistan Airways	767-300ER	PW4000	8	8	8	8
CIT Leasing Corp.	A330-200	PW4000	16	16	16	16
Kingfisher Airlines	A330-200	PW4000	30	30	30	30
Lufthansa	A330-300	PW4000	2	0	0	0
Swiss International	A330-300	PW4000	22	22	18	14
Cathay Pacific	747-400ERF	PW4062A	16	4	0	0
Asiana	777-200ER	PW4090	6	6	6	6
Air Caraïbes	A330-300	PW4164	4	4	2	2
Grupo Marsans	A330-200	PW4170	18	16	14	12
Korean Air	A330-200	PW4170	0	12	12	12
TAM Linhas Aereas	A330-200	PW4170	8	8	8	8
US Airways	A330-200	PW4170	50	50	46	46
Flyington Freighters	A330-200F	PW4170	24	24	24	24
<b>Total</b>			<b>204</b>	<b>200</b>	<b>184</b>	<b>178</b>

### PW6000

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
US Airways	A318	PW6000	6	0	0	0
<b>Total</b>			<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Rolls-Royce.

### Firm Engine Order Totals.

	Total on Order Mar 31 2007	Total on Order June 30 2007	Total on Order Sep 30 2007	Total on Order Dec 31 2007	Total on Order Mar 31 2008	Total on Order June 30 2008	Total on Order Sep 30 2008	Total on Order Dec 31 2008	Total on Order Mar 31 2009	Total on Order June 30 2009	Total on Order Aug 31 2009
RB211	8	8	4	4	4	4					
Trent 500	208	152	136	152	148	124	100	96	88	72	64
Trent 700	154	260	268	284	414	448	470	462	442	418	430
Trent 800	40	30	24	22	22	30	30	30	28	24	22
Trent 900	300	300	300	348	340	332	284	300	300	292	284
Trent 1000	280	366	366	470	528	528	538	542	512	516	516
Trent XWB	22	270	270	462	742	758	916	966	966	986	986
<b>Total</b>	<b>1,012</b>	<b>1,386</b>	<b>1,368</b>	<b>1,742</b>	<b>2,198</b>	<b>2,224</b>	<b>2,338</b>	<b>2,396</b>	<b>2,336</b>	<b>2,308</b>	<b>2,302</b>

### Trent 1000

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
All Nippon Airways	787-3	Trent 1000	60	60	56	56
Air China	787-8	Trent 1000	30	30	30	30
Air Europa	787-8	Trent 1000	16	16	16	16
All Nippon Airways	787-8	Trent 1000	40	40	54	54
Avianca	787-8	Trent 1000	24	24	24	24
AWAS	787-8	Trent 1000	12	12	12	12
Boeing Business Jet	787-8	Trent 1000	2	2	0	0
British Airways	787-8	Trent 1000	16	16	16	16
Icelandair	787-8	Trent 1000	8	8	8	8
ILFC	787-8	Trent 1000	80	80	80	80
LAN Airlines	787-8	Trent 1000	36	36	36	36
LCAL	787-8	Trent 1000	22	10	10	10
LOT Polish Airlines	787-8	Trent 1000	16	16	16	16
Monarch Airlines	787-8	Trent 1000	12	12	12	12
Northwest Airlines	787-8	Trent 1000	36	36	36	36
Unidentified	787-8	Trent 1000	4	4	0	0
Air New Zealand	787-9	Trent 1000	16	16	16	16
British Airways	787-9	Trent 1000	32	32	32	32
ILFC	787-9	Trent 1000	12	12	12	12
LAN Airlines	787-9	Trent 1000	16	16	16	16
LCAL	787-9	Trent 1000	18	0	0	0
Nakash	787-9	Trent 1000	4	4	4	4
Virgin Atlantic	787-9	Trent 1000	30	30	30	30
<b>Total</b>			<b>542</b>	<b>512</b>	<b>516</b>	<b>516</b>

## Trent XWB

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Asiana	A350-1000	Trent XWB	20	20	20	20
Emirates	A350-1000	Trent XWB	40	40	40	40
Etiihad Airways	A350-1000	Trent XWB	50	50	50	50
Qatar Airways	A350-1000	Trent XWB	40	40	40	40
Aeroflot	A350-800	Trent XWB	36	36	36	36
Afriqiyah Airways	A350-800	Trent XWB	12	12	12	12
Air One	A350-800	Trent XWB	24	24	0	0
Airbus Exec Jets	A350-800	Trent XWB	2	2	2	2
Aircraft Purchase Fl	A350-800	Trent XWB	0	0	24	24
Alafco	A350-800	Trent XWB	24	24	24	24
Asiana	A350-800	Trent XWB	20	20	20	20
Bangkok Airways	A350-800	Trent XWB	8	8	8	8
CIT Leasing	A350-800	Trent XWB	10	10	10	10
Hawaiian Airlines	A350-800	Trent XWB	12	12	12	12
ILFC	A350-800	Trent XWB	24	24	24	24
Kingfisher Airlines	A350-800	Trent XWB	10	10	10	10
Libyan Airlines	A350-800	Trent XWB	8	8	8	8
Pegasus Aviation Fin.	A350-800	Trent XWB	4	4	4	4
Qatar Airways	A350-800	Trent XWB	40	40	40	40
Synergy Aerospace	A350-800	Trent XWB	20	20	20	20
TAM	A350-800	Trent XWB	24	24	24	24
TAP Air Portugal	A350-800	Trent XWB	24	24	24	24
Tunia Ais	A350-800	Trent XWB	6	6	6	6
US Airways	A350-800	Trent XWB	36	36	36	36
Yemenia	A350-800	Trent XWB	20	20	20	20
Aer Lingus	A350-900	Trent XWB	12	12	12	12
Aeroflot	A350-900	Trent XWB	8	8	8	8
AirAsia X	A350-900	Trent XWB	0	0	20	20
Airbus Exec Jets	A350-900	Trent XWB	14	14	14	14
Asiana	A350-900	Trent XWB	20	20	20	20
China Airlines	A350-900	Trent XWB	28	28	28	28
CIT Leasing	A350-900	Trent XWB	4	4	4	4
DAE Capital	A350-900	Trent XWB	60	60	60	60
Emirates	A350-900	Trent XWB	100	100	100	100
Finnair	A350-900	Trent XWB	22	22	22	22
ILFC	A350-900	Trent XWB	16	16	16	16
Qatar Airways	A350-900	Trent XWB	80	80	80	80
Singapore Airlines	A350-900	Trent XWB	40	40	40	40
TAM	A350-900	Trent XWB	20	20	20	20
US Airways	A350-900	Trent XWB	8	8	8	8
Vietnam Airlines	A350-900	Trent XWB	20	20	20	20
<b>Total</b>			<b>966</b>	<b>966</b>	<b>986</b>	<b>986</b>

## Trent 900

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Airbus Exec Jets	A380	Trent 900	4	4	4	4
British Airways	A380	Trent 900	48	48	48	48
China Southern	A380	Trent 900	20	20	20	20
Lufthansa	A380	Trent 900	60	60	60	60
Malaysia Airlines	A380	Trent 900	24	24	24	24
Qantas	A380	Trent 900	68	68	68	64
Singapore Airlines	A380	Trent 900	52	52	44	40
Virgin Atlantic	A380	Trent 900	24	24	24	24
<b>Total</b>			<b>300</b>	<b>300</b>	<b>292</b>	<b>284</b>

### Trent 800

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
El Al Israel	777-200ER	Trent 800	8	8	8	8
British Airways	777-200ER	Trent 800	8	6	2	0
American Airlines	777-200ER	Trent 892	14	14	14	14
<b>Total</b>			<b>30</b>	<b>28</b>	<b>24</b>	<b>22</b>

### Trent 700

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
AerCap	A330-200	Trent 700	18	16	14	14
Air China	A330-200	Trent 700	40	40	40	34
Aircastle	A330-200	Trent 700	10	10	8	8
Avianca	A330-200	Trent 700	16	16	12	12
China Southern	A330-200	Trent 700	20	20	20	20
CIT Leasing Corp.	A330-200	Trent 700	6	2	2	2
Guggenheim Aviation	A330-200	Trent 700	8	8	8	8
Hawaiian Airlines	A330-200	Trent 700	12	12	12	12
Hong Kong Airlines	A330-200	Trent 700	34	34	34	34
ILFC	A330-200	Trent 700	4	2	0	0
Oman Air	A330-200	Trent 700	4	4	4	4
Aircastle	A330-200F	Trent 700	14	14	14	14
Ethiad Airways	A330-200F	Trent 700	6	6	6	6
Guggenheim Aviation	A330-200F	Trent 700	4	4	4	4
Intrepid Aviation	A330-200F	Trent 700	34	34	34	34
MatlinPatterson	A330-200F	Trent 700	12	12	12	12
MNG Airlines	A330-200F	Trent 700	4	4	4	4
OH Avion	A330-200F	Trent 700	16	16	16	16
Air China	A330-300	Trent 700	0	0	0	6
Cathay Pacific	A330-300	Trent 700	16	16	16	16
Egyptair	A330-300	Trent 700	10	10	10	10
Ethiad Airways	A330-300	Trent 700	10	10	10	10
Garuda Indonesia	A330-300	Trent 700	6	6	6	6
Gulf Air	A330-300	Trent 700	40	40	40	40
Hong Kong Int	A330-300	Trent 700	6	6	6	6
Oman Air	A330-300	Trent 700	6	6	6	6
Singapore Airlines	A330-300	Trent 700	38	30	22	22
Thai Airways Int.	A330-300	Trent 700	16	16	12	10
Turkish Airlines	A330-300	Trent 700	0	0	0	14
Air Asia Xpress	A330-300	Trent 700EP	46	46	46	46
Middle East Airlines	A330-200	Trent 772	6	2	0	0
<b>Total</b>			<b>462</b>	<b>442</b>	<b>418</b>	<b>430</b>

### Trent 500

Customer	Aircraft on Backlog	Engine Choice	Engines on order on Dec 31, 2008	Engines on order on Mar 31, 2009	Engines on order on June 30, 2009	Engines on order on Aug 31, 2009
Airbus Exec Jets	A340-500	Trent 500	12	12	12	12
Arik Air	A340-500	Trent 500	4	4	0	0
Kingfisher Airlines	A340-500	Trent 500	12	12	12	12
Ethiad Airways	A340-600	Trent 500	12	12	8	4
Iberia	A340-600	Trent 500	20	20	16	12
Lufthansa	A340-600	Trent 500	12	4	0	0
Virgin Atlantic	A340-600	Trent 500	24	24	24	24
<b>Total</b>			<b>96</b>	<b>88</b>	<b>72</b>	<b>64</b>