AVIATION WEEK Intelligence NETWORK

OEM Production Rates

Intelligence & Data Services | Aviation Week Network
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AVIATION WEEK NETWORK

Production rates – Preface

The purpose of this report is to analyse and understand the production output of original equipment manufacturers (OEMs) of aircraft. A key focus is the disparity between production rates and delivery numbers, which often diverge significantly. For instance, Boeing continued producing the 737 MAX throughout 2019, despite being unable to deliver those aircraft due to regulatory and operational challenges.

In an ideal scenario, production rates and delivery rates would align closely, reflecting a seamless flow from manufacturing to customer delivery. However, the complexities of the aviation industry, including supply chain disruptions, certification delays, workforce issues and market dynamics, make this alignment difficult to achieve. This report aims to explore these discrepancies and provide insights into the factors influencing OEM production and delivery performance.

Note:

- Aviation Week's 10-year Commercial Fleet & MRO forecast, forecasts deliveries, not build rates.
- Built aircraft are mated aircraft that have rolled off the production line. Therefore, included in the inventory numbers will be unfinished aircraft, prototypes and 'gliders'.

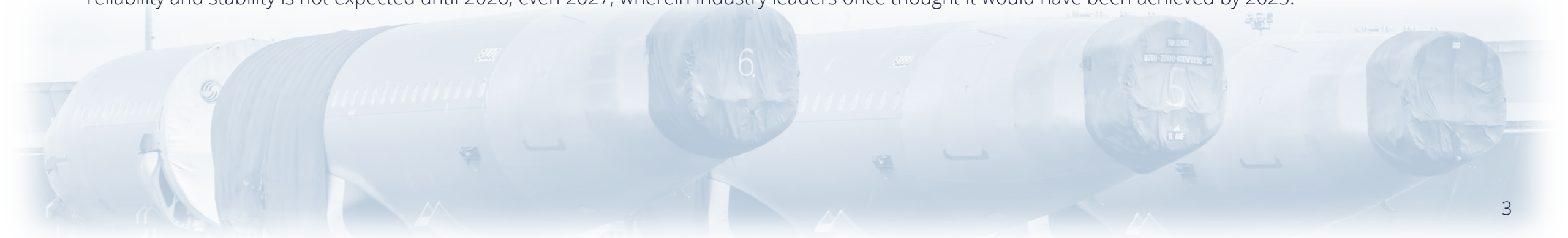


Production rates – Executive Overview

The following are impacting all production runs:

- Workforce – This is the leading issue in the sector with little relief in sight. While topline headcount has returned to the pre-pandemic level, the underlying workforce is newer and far less experienced. Starting in 2020, aerospace companies laid off or saw veteran workers with career-long institutional knowledge retire in droves. It can take 6-18 months to train a new factory worker to gain the requisite skill set depending on the specialty (e.g., 5-axis machine in months, metal forgings and castings in years). And only then does the worker start gaining workflow fluency. Meanwhile, many smaller Tier 3 suppliers continue to struggle to stay fully staffed, as many cannot compete with salaries, benefits and work-life expectations of today's three-generation workforce.

- Supply Chain – OEMs, Tier 1s and large defence primes say each year gets marginally better, but not as fast or reliable as they thought. The good news is that there are no longer any entrenched chokepoints, such as microchips or castings and forgings, as there was in 2021-2023. The bad news is that managers complain of fighting a constant set of little fires (in some cases some bigger fires, see following page) – delayed electronics one day, insufficient raw materials inventory another, or a key supplier that suddenly switches work to a new factory without notice and proper preparation. System-wide reliability and stability is not expected until 2026, even 2027, wherein industry leaders once thought it would have been achieved by 2023.



Production rates – Continued Uncertainty

Economic Uncertainty: Q3 2025 Overview

Market Volatility & Tariff Policies

Q3 2025 continued the uncertainty from Q1 and Q2, dominated by the continuation of unpredictable trade policies. The US imposed a 50% tariff on Brazil (10 + 40), which would have increased the cost of an E175 by around $9 million, however Embraer became exempted from the 'additional 40%' and are now back to the original 10% tariff. The US-China tariff 'truce' has been extended into November 2025, leading to continued uncertainty with an aircraft market (China) that will have a requirement for a number of aircraft in the near future.

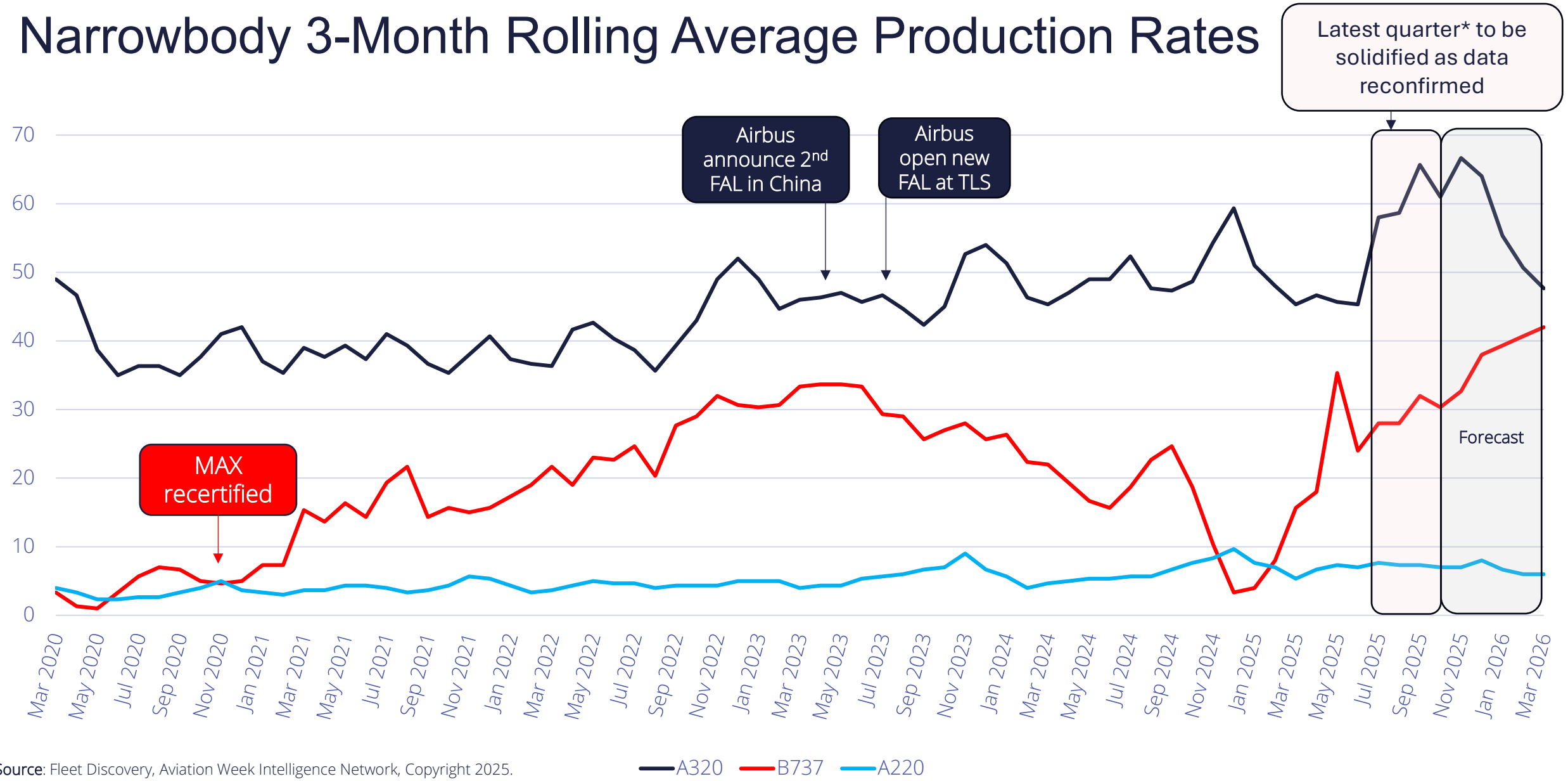
Global Tensions & Economic Indicators

- **Middle East Conflict**: Gaza ceasefire plan signed
- **Currency Weakness**: US Dollar (DXY) declined approximately 11% H1 2025, however stabilized during Q3
- **Inflation**: Showing concerning upward trends

Travel & Aviation Impact

- US Government shutdown may impact US travel
- Increased unemployment rate in the US
- US inflation uptick

Narrowbody 3-Month Rolling Average Production Rates



Source: Fleet Discovery, Aviation Week Intelligence Network, Copyright 2025.
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Narrowbody 3-Month Rolling Average Production Rates - Analysis



- 737 – Historical analysis suggests that 737 production climbed to the low 30's by late 2022 and stayed on average a little over 30 for the first half of 2023. But then a series of setbacks centred around Spirit AeroSystems started eating into monthly numbers. First there was a surprise 10-day summer strike in Wichita that clogged all 737 shipsets. Then there were revelations that tail fin assemblies and aft pressure bulkheads were not being manufactured correctly and many finished fuselages also needed rework. In turn, production slowed to the upper 20s a month. In the aftermath of the Jan. 5, 2024, door plug blowout on an inflight MAX 9 and the slew of factory investigations and "quality stand-downs" that followed, Boeing production fell to upper teens by April 2024, and possibly dropping into single figure numbers by the end of the 1st half of 2024. The impact of the strike on the 737 will be felt through out 2025, as the production line has to re-ramp back up. Initially Boeing looks to get back at rate 20+ before pushing on to get to 30+. Boeing induced their first 'Rate 38' aircraft during Q2 2025. Boeing CEO is hoping for rate 42 before the end of the year, but our analysis thinks that this is unlikely.
- Other factors impacting the 737 line:
  - FAA oversight, with the FAA having to sign off on every aircraft, restrictions lifted slightly, with Boeing able to 'ticket' their aircraft every other week
  - FAA imposed cap of rate 38/month – currently no proposed end date, but talks are progressing to see if restrictions can be lifted
  - MAX 7 & MAX 10 certification delays as resolve for the Engine Anti-Icing issue before certification; however, certification flights have resumed. MAX 7 started flying again early October 2025

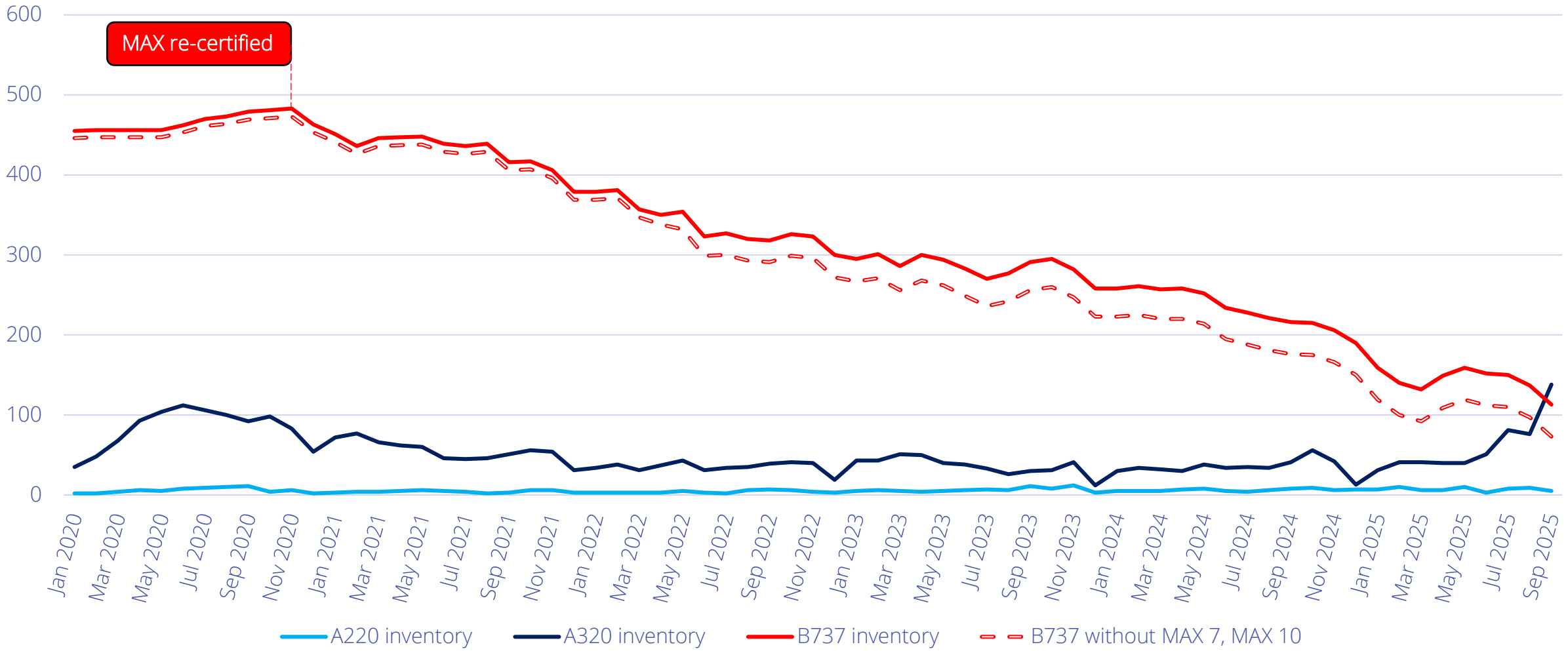
Narrowbody 3-Month Rolling Average Production Rates - Analysis

- A320 Production of the NEO stayed around the upper 30's per month from late 2020 through the end of third-quarter 2022. From fourth-quarter 2022 through first-quarter 2023 production increased to mid-40's. Airbus also has announced a second final assembly line (FAL) in China and converted the old A380 line in Toulouse to make A320s. Airbus have ramped up global A320 production from the mid-50' to the low 60's and look to be set with that target for the remainder of 2025. With a stated goal of rate 75 originally by 2026, but with a chance that it may slip to the right in a time of cautious optimism. The NEO has also been impacted by:
  - A321s just take longer to build, therefore adding FAL capacity enables the output to remain the same.
  - Pratt & Whitney supplied GTF engine concerns, especially recent powder metal issue. Supply for new-builds has been sustained, but spares are harder to come by, to keep delivered aircraft in the air. The Pratt GTF Advantage should start rolling off the production line in 2026 which will bring with it many benefits for Pratt powered neo customers.
  - Continued CFM LEAP-1A delivery delays, due to engine blade issues. This may not impact A320 production per se, however, it will impact delivery numbers and may lead to an issue is Airbus have many 'gliders' built but awaiting engines.



- A220 – A220 still has a relatively low orderbook, so is 'less' important. With a little under 500 outstanding orders, the build backlog at 'rate 6' is 7 years, 'rate 9' is 4.5 years and Airbus' goal of 'rate 14' is under 3 years. The A220 is still a program that requires ramp up. Rate grew from around 5 per month in 2020, however, there is evidence of a move up to rate 7.

Narrowbody 'Inventory'



Source: Fleet Discovery, Aviation Week Intelligence Network, Copyright 2025.
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Narrowbody Inventory- Analysis



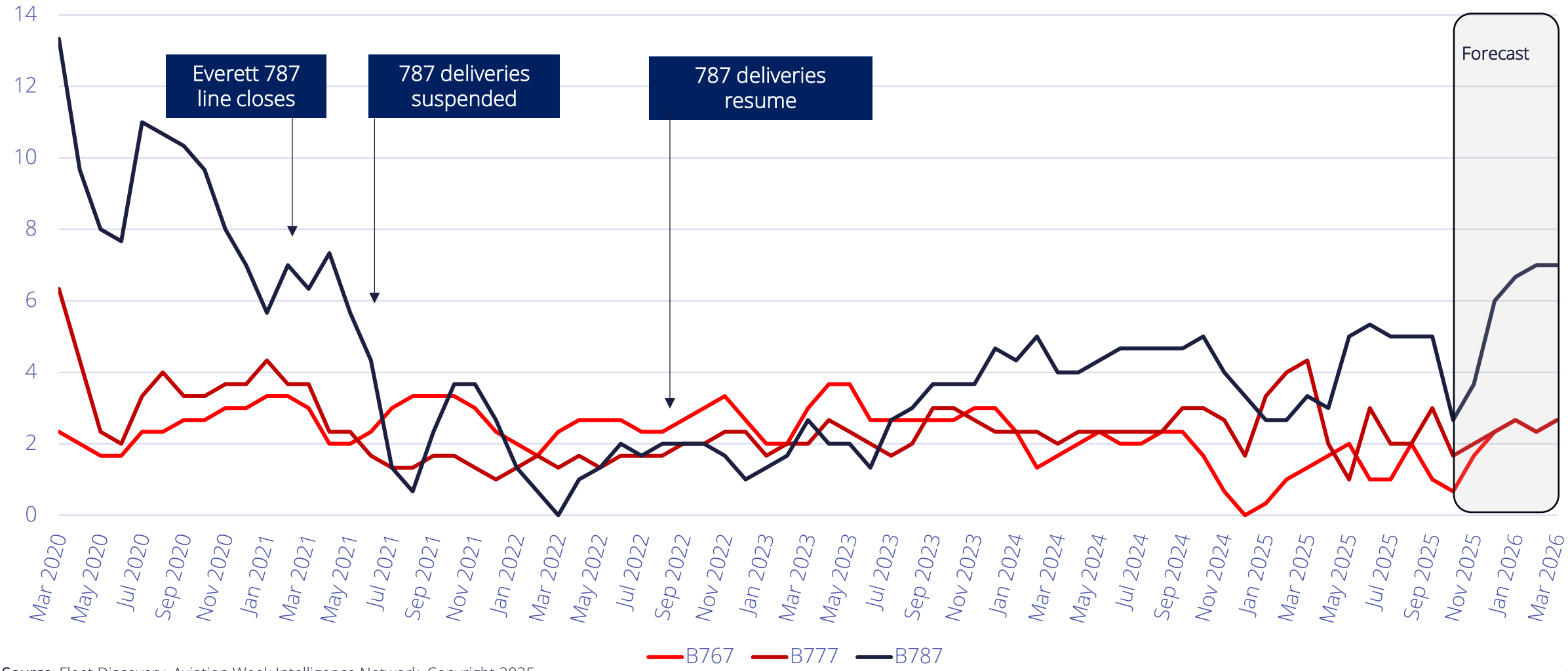
- Average inventory is defined as aircraft that are built but not delivered at the end of every month (Pre-Service, Built). There is always inventory, as generally these aircraft will be delivered in the first few weeks of the month after certification.

- For the A320 family standard inventory level is usually just under 40, however, the average more than doubled during 2020 due to a lack of supplied engines (both LEAP and GTF), as well as the difficulty of delivering aircraft during the pandemic.. After the push by engine OEMs to satisfy Airbus' need to meet end of year 2024 numbers, the engine deliveries for 2025 have re-settled to a 'normal' rate, which slowly builds up the A320 family inventory, as there are aircraft awaiting engines, however, with continued delays in receiving the CFM LEAP engines, and P&W GTF engines, Airbus are building more and more 'gliders', leading to 70+ in addition to the standard 'inventory'.

- Similarly for MAX inventory, the norm is 40. During the type's post-crash grounding and production pause, inventory reached more than 480 aircraft during 2020. That number has dropped to around 250 by the end of 2023. With the recent production issues that Boeing are having with the MAX, the inventory aircraft are making up a larger percent of monthly deliveries and is subsequently coming down. The inventory dropped below 200 for the first time in Q3 2024, and almost dipping below 150 at the end of 2024, of which there are 35 MAX 7 & MAX 10 aircraft built that are yet to be certified. This is a small good news story for Boeing, as Boeing managed to deliver a few inventory build MAX during the strike. A boost for Boeing that during Q1 2025 the inventory for certified Max 8/8200's finally dipped below the 100 aircraft level for the first time, if we exclude the yet to be certified MAX 7 & 10, and looks to be settling at an almost negligible inventory level.

- The A220 constantly has around 5 or 6 aircraft in its inventory, again this is what we would deem as standard.

Boeing 3-Month Rolling Widebody Average Production Rates



Source: Fleet Discovery, Aviation Week Intelligence Network, Copyright 2025.
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Boeing Widebody 3-Month Rolling Average Production Rates - Analysis

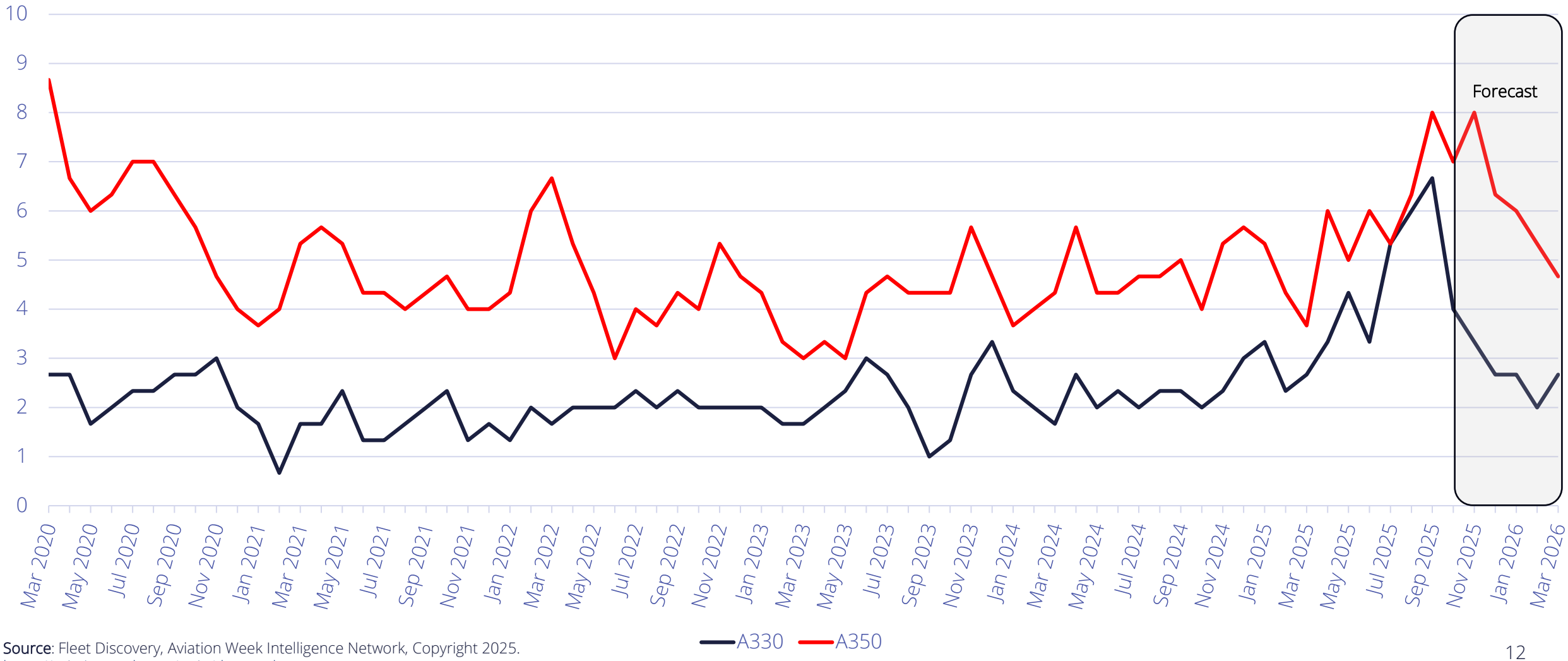
- 767 – The 767-production line comprises of the 767-200F and the KC-46, which for the purpose of production analysis we need to include. Production rate has held reasonably constant at a low 2-2.5 per month production rate and shall remain at those level until Boeing stop producing the 767 for the commercial market

- 777 – The 777-production line comprises mainly of 777-200F, however, during 2020 started rolling 777-9's off the production line, for flight testing in preparation for certification (probably due 2026). Six more have rolled off the production line in 2024. The 777X program has been delt a further blow with issues with engine mount issues found on all four-test aircraft. Whilst a resolution has been found, and fitted, certification flights have resumed, but certification is a slow process.
  Production has remained at a 2 per month rate since Q2 2021, and other than the strike period it is set to continue around that rate for the remainder of 2025.


Credit: Guy Norris

- 787 – Production dropped from 2020, in part because of the closure of the Everett production line and 787 production consolidated exclusively in Charleston, SC. Charleston production seemed to settle in at 6 per month for a short time, however, 'quality escapes' on the 787 led to a pause in deliveries, resulting in the lowering of the production rate to 1.5-2 per month, through the first half of 2023. Deliveries did resume in Q3 2022, but several aircraft had to be 'fixed' prior to delivery. During the second half of 2023, production has been 'ramped up' slowly to 3-3.5 per month. Strike impacts indirectly led to a slight lowering of production, even though the Charleston, SC workforce we not out on strike, with production lowering in Q4 2024 to around 2 per month. Forecast again aims to return and stick with 'rate 5' throughout the remainder of 2025, ramping up to rate 6 in early 2026.

Airbus 3-Month Rolling Widebody Average Production Rates



Source: Fleet Discovery, Aviation Week Intelligence Network, Copyright 2025.
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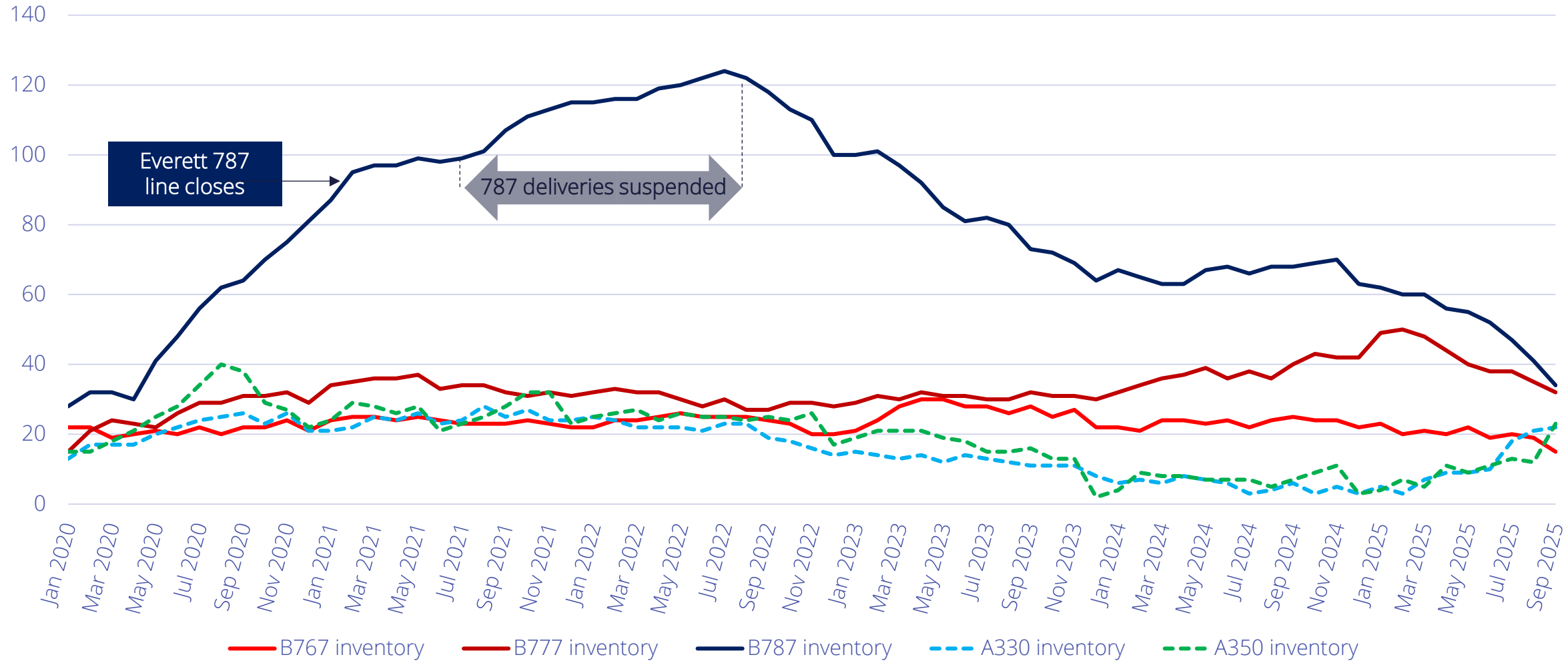
Airbus Widebody 3-Month Rolling Average Production Rates - Analysis

- A330 – The A330 production line is mainly comprised of the A330-900 and then a few Multi Role Tanker Transport (MRTT) aircraft. Production has remained at approximately 2 per month, since the beginning of 2021. During the latter part of 2023, Airbus began the ramp from rate 2 to rate 3 in early 2024, with possible hopes of a higher rate in 2025. Rate 3 firmly remains the short-term goal for the A330 group, and with 32 delivered in 2024, and 82 ordered, this rate is acceptable. Airbus had a successful Q2 2025 with 61 A330-900 orders, centred round the Paris Airshow. Airbus now have a giving a backlog of almost 300 aircraft, which is over 7 years of backlog at rate 3, or 4.5 years at rate 5.
  - Airbus have found a launch customer for the A330-800 MRTT



- A350 – Rates dropped to 4.5-5 per month at the start of 2021. Those rates have remained through to Q4 2023, where the ramp to rate 6 began. It appears the push for a higher monthly rate has begun in 2024, and Airbus are almost at rate 6 as we start 2025. Airbus want to ramp again to rate 9 in 2025, but chances are, that might be pushed back to 2026. With 57 deliveries and 142 orders of the A350 group in 2024, leaving Airbus with a 700+ backlog, rate 6 is a stepping stone to a higher rate to bring the backlog down from 10 years, with a hopeful push to rate 7 in early 2026. With a backlog at the end of Q3 2025 of almost 770 aircraft, rate 7 equates to 9 years' worth of backlog.

Widebody 'Inventory'



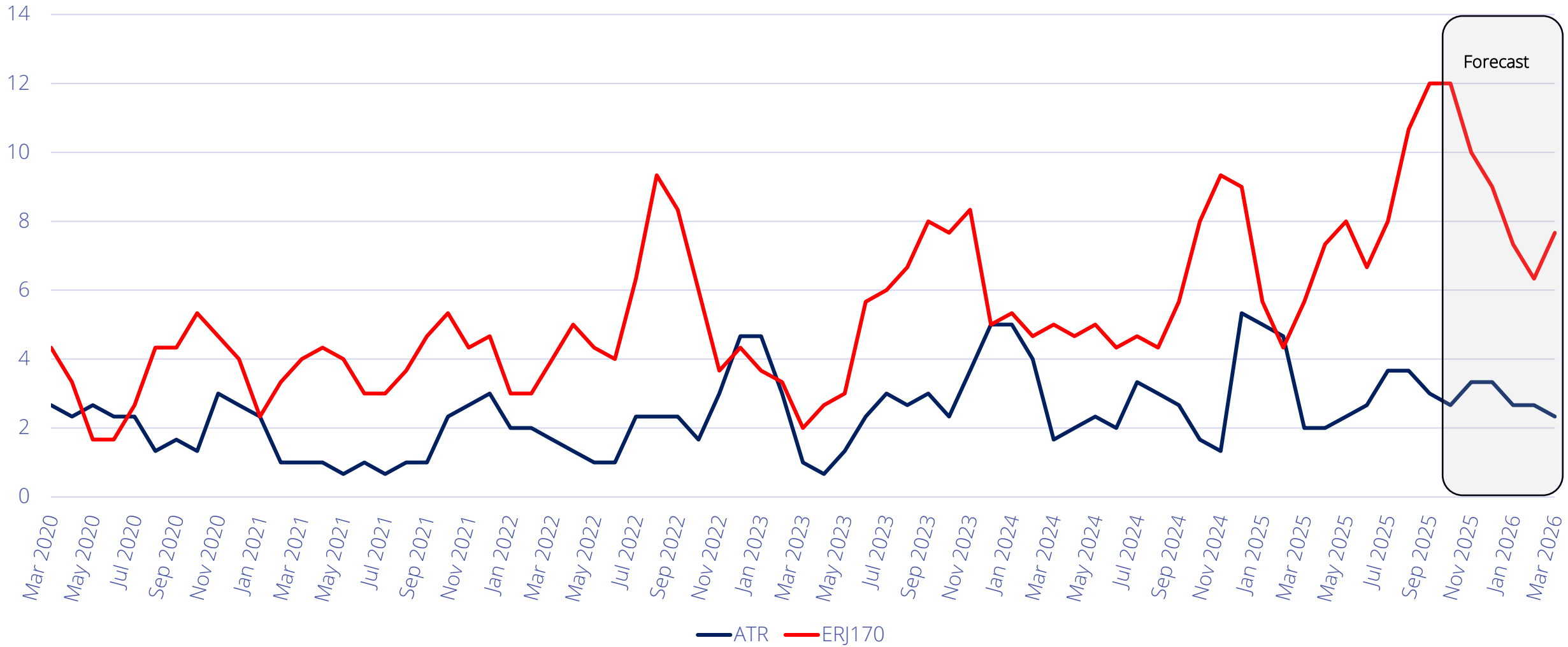
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Widebody Inventory- Analysis



- 767 and 777 – These two production groups will generally have an 'inventory' of around 20 aircraft. The 767 due to the number of KC-46's that are built buy not yet delivered as they take time to have mission packages installed to the aircraft. The 777 inventory also includes 28 777-9's as of the end of 2024, which inflate the inventory numbers as this uncertified aircraft cannot yet be delivered. Boeing have re-started test flights with the 777-9 in early 2025 as they look to resolve the engine thrust link issue that was uncovered in Q3 2024.
- 787 – The 787 inventory grew after the almost 18 month pause in deliveries. The inventory has slowly come down, as the built aircraft have the fixes applied and then signed off by the FAA. Like the 767 and 777 above, once the inventory gets back down to around 20, it is deemed that there is no 'outstanding inventory', as 20 would appear a nominal number, which leaves a little over 15 'extra' 787's currently. Rework of the 787's that had fuselage join issues has been completed in Q1 2025, leading to a lowering of the inventory to number approaching normal towards the end of 2025.
- A330 – An inventory of 20 aircraft sustained through the end of 2022, and the inventory dropped down to single figures as of late 2023. Inventory remains low as Airbus appear to keep on top of delivering A330's not that long after production. Q1 2025 inventory has begun to trend upwards slightly, which continued in Q2, and plateaued in Q3, as supply chain delays hold back deliveries.
- A350 – Post pandemic, the inventory numbers have stabilised in the upper teens. There's been some issues with getting some interiors certified and installed on these aircraft, which slows down some deliveries. A350 inventory has crept up during Q3 2024, to over 30 aircraft, and we are beginning to see the inventory dwindle with the end of year delivery 'push'. However, inventory levels have grown slightly as supply chain woes take their toll.

Regional 3-Month Rolling Average Production Rates



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Regional 3-Month Rolling Average Production Rates - Analysis

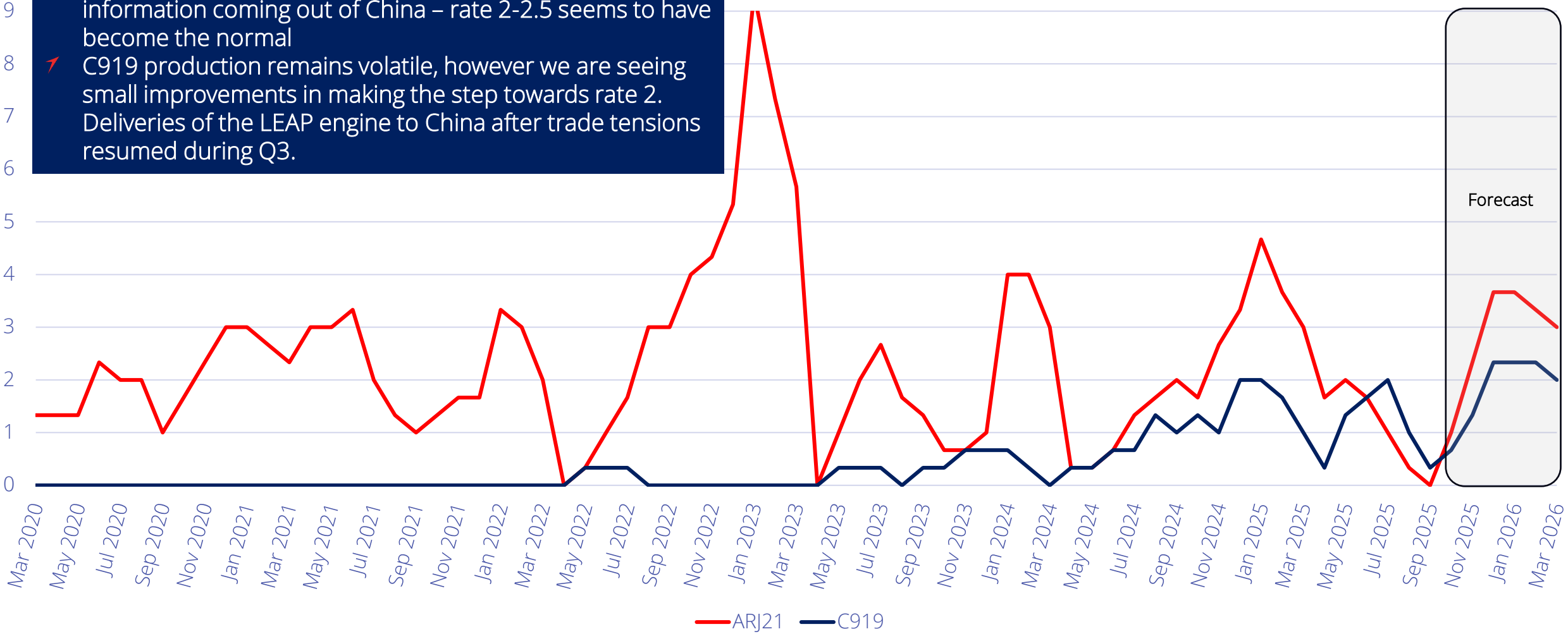
- ATR – ATR are now the only regional turboprop manufacturer in the market (30+ seats). Production has remained at around 2 per month for the three in production types. With ATR delivering 36 aircraft in 2023 and 34 in 2024, and with a current inventory of just under 20 aircraft, then production can remain at rate 2 for most of 2025 and it still satisfy the requirement, however ATR have pushed to rate 3. ATR also announced that it was to stop development of the ATR 42 STOL type, as demand was low. The first half of 2025 has seen some notable orders, with announcements in late Q2 equating to a year's worth of production.

- ERJ170 – Rate 4 seems to be the trend through to the end of Q2 2023. An increase during 2023 to rate 6, has remained through out the whole of 2024. Buoyed by the 2024 American Airlines order for almost 100 aircraft, then rate 6 is sustainable for 2025 and Embraer are set for that rate, but Embraer will be looking to push to rate 7, with Embraer are the only western regional jet manufacturer making scope clause compliant aircraft, delivering a little more than 70 aircraft in 2024. 2025 has been a strong order year for Embraer and with a orderbook of almost 500 aircraft, rate 7 equates to almost 6 years worth of production.



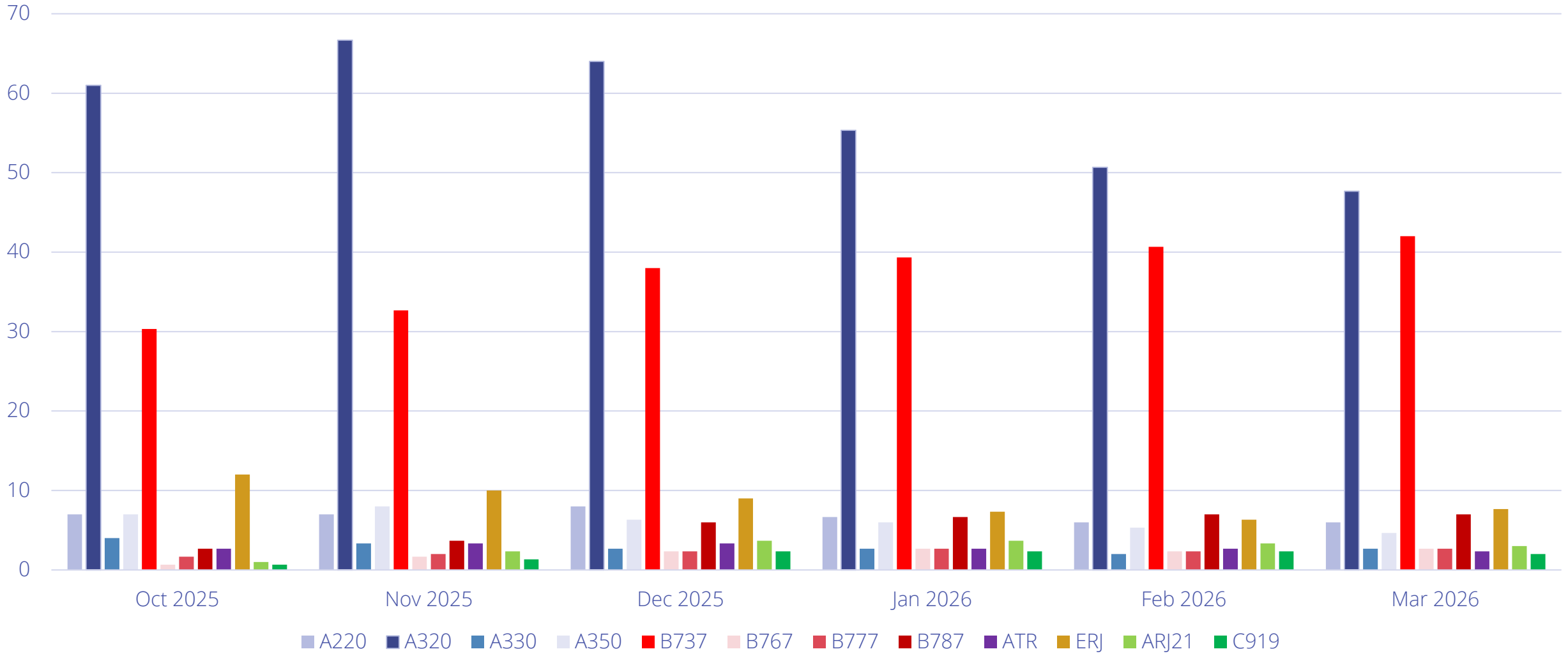
COMAC 3-Month Rolling Average Production Rates

- ARJ21 (C909) production seems sporadic due to nature of information coming out of China – rate 2-2.5 seems to have become the normal
- C919 production remains volatile, however we are seeing small improvements in making the step towards rate 2. Deliveries of the LEAP engine to China after trade tensions resumed during Q3.



Source: Fleet Discovery, Aviation Week Intelligence Network, Copyright 2025.
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Forecast 3-Month Rolling Average Production Rates



Source: Fleet Discovery, Aviation Week Intelligence Network, Copyright 2025.
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Production Rates – General Notes

- Forecast – Production rate forecast put together by the Aviation Week subject matter experts. Note that this is different to the Aviation Week 10-year Fleet and MRO forecast, which looks at delivery rates.

- Last quarter data – The most recent quarter data can and will change as time moves on. The production data is compiled from Aviation Week's Fleet Discovery product, and then a 3-month rolling average is created to blend out the slight peaks and troughs. However, due to the way Aviation Week track aircraft being built, we could capture them once the aircraft has had its wings attached to the fuselage, which later, may be then updated to mirror the roll-out or first flight date of the aircraft. This leads to the rise in A320 production in the latest quarter.

- FAL– Final Assembly Line

- TLS – Toulouse, France



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Thank You!

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