

# Commercial Aviation 2021 Fleet & MRO Forecast Webinar

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**Fleet&MRO**  
 FORECASTS

**Commercial Aviation**  
**2021 Fleet & MRO Forecast**

Intelligence & Data Services | Aviation Week Network  
 Washington, D.C., London, UK

September 2020

Brian Coe, Dan Williams, Clay Caffery

## Global Economy

The economic downturn caused by COVID-19 will be significantly worse than after the 2008 financial crisis

Unlike after the global financial crisis, GDP is expected to contract in all global regions.

**Highlights**

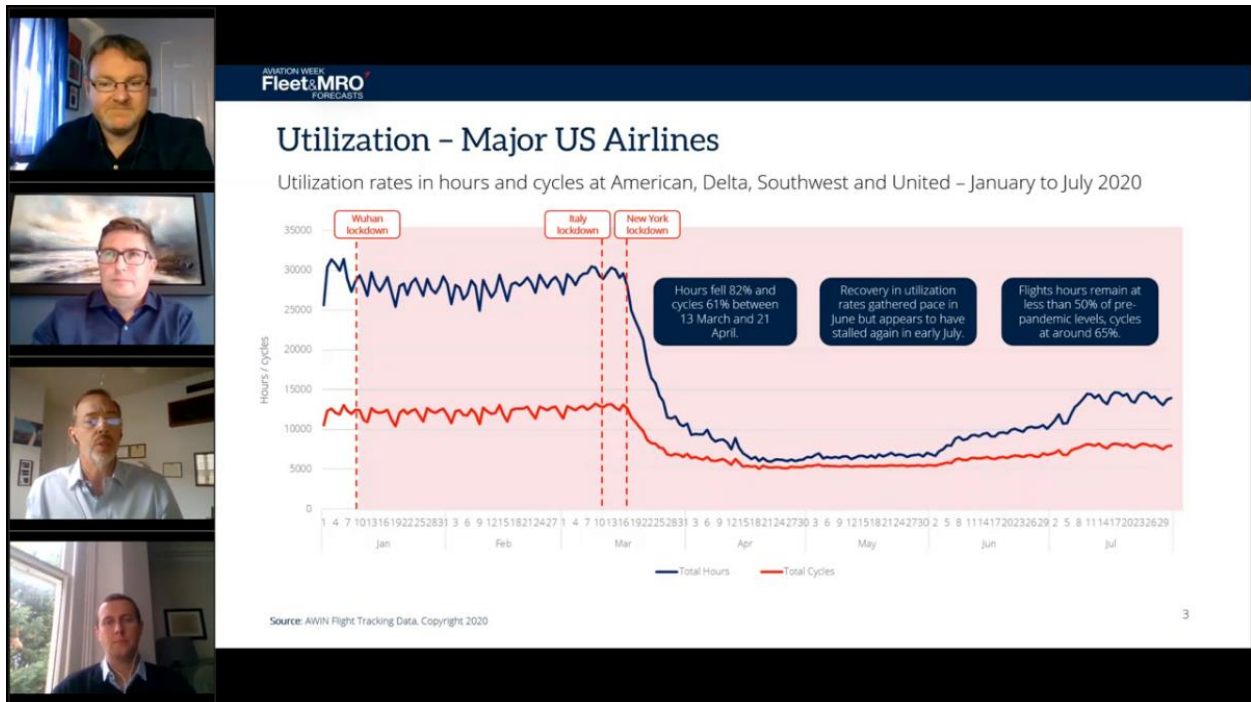
- Downturn is projected to be significantly worse than the one which followed the Global Financial Crisis
- Global GDP is expected to contract by between 4-6% in 2020
- Extent of the economic impact varies by region, but all will see GDP fall

**Analysis**  
 Measures introduced to combat COVID-19 have resulted in the largest and most widespread global recession since the second world war. Global GDP is expected to shrink by 4-6%, a rate three or four times higher than after the global financial crisis. Furthermore, while the depths of the initial downturn are now largely known the speed of the recovery remains in doubt. GDP growth returned in Q3 but has not returned to previous highs. Fluctuating rates of infection in key global economies have seen the return of localized restrictions on populations and have raised the possibility of the return of nationwide lockdowns. Should a 'second wave' build the growth seen in Q3 would be reversed while governments may be reluctant or unable to approve another raft of comprehensive economic support measures.

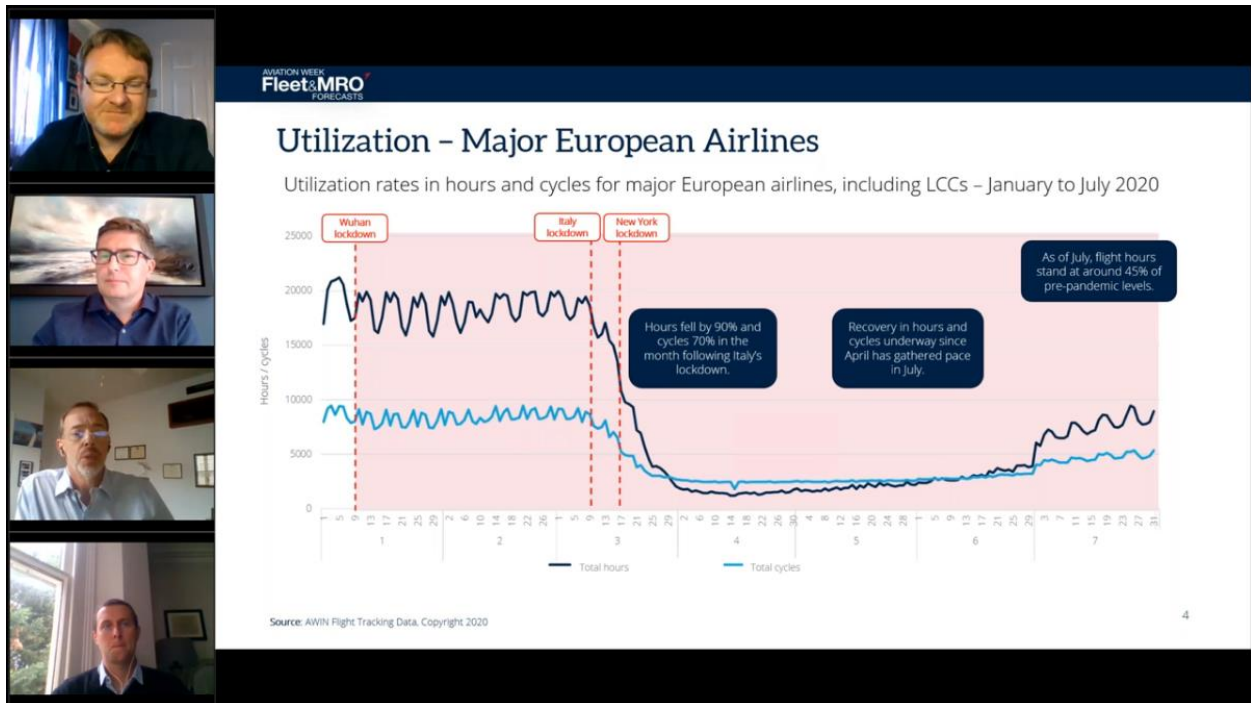
Source: IMF

Released a "Service Bulletin" and monthly KPI and early release of forecast.

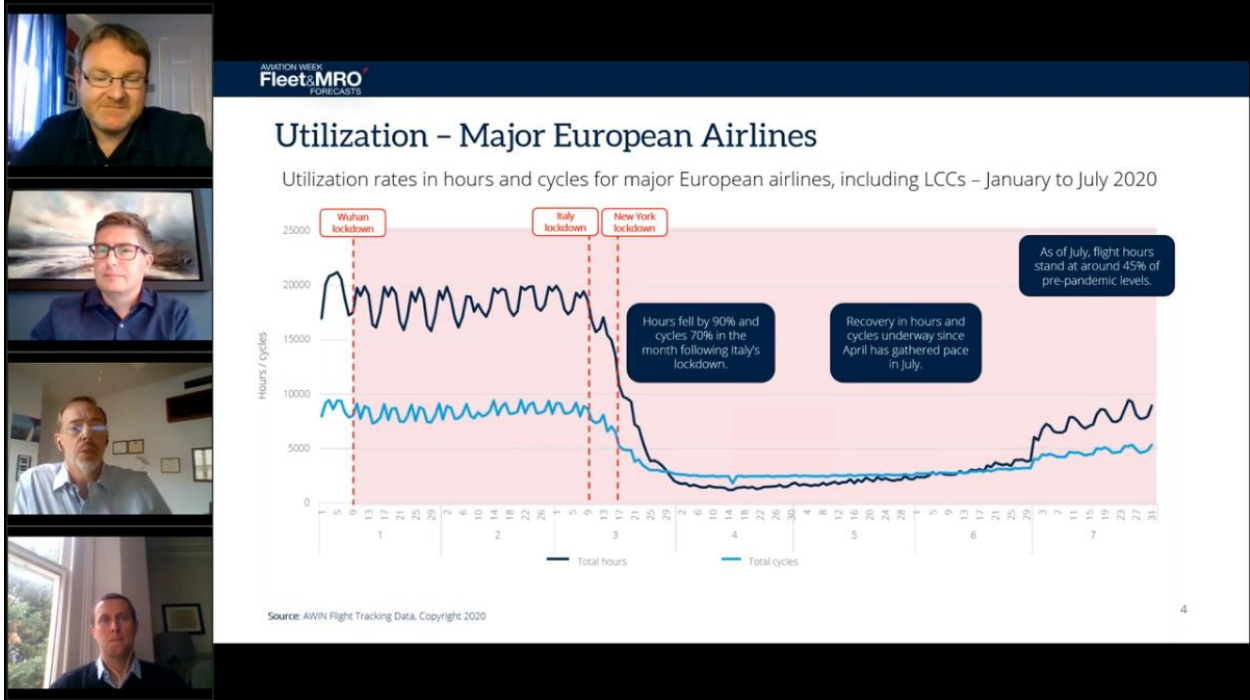
Estimate by IMF for GDPs across the regions



Major US airlines and tracking hours and cycles. Less than 50%



European less than 45% (interesting that longer haul routes seem to be coming on line – Lee's insight)




Missed slide...

Cargo (non package carriers)



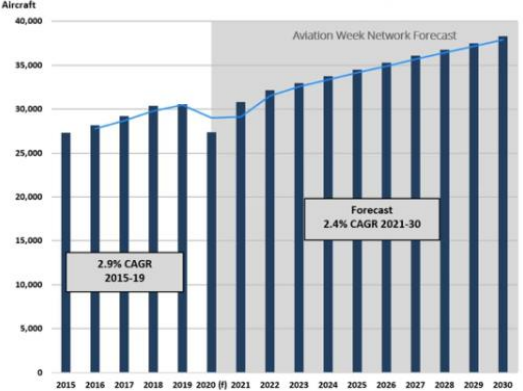
Big Europe spike is Ryanair, Whizz and a couple others came back on line



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## In-Service Fleet - Analysis

Annual count of active commercial aircraft, historical & forecasted



**Highlights**

- 2.4% CAGR expected after 2.9% historical fleet growth.
- In-service fleet in 2020 is expected to fall to 27,370 aircraft – below 2015 levels – losing 3,200 aircraft vs. 2019.
- Narrowbodies are key growth driver over decade.

Fleet increases from 27,370 in 2020 to 38,300 in 2030

**Analysis**

Commercial in-service or active fleet strengths have grown at 2.9% CAGR since 2015, but the impacts of the coronavirus pandemic created a precipitous drop that will linger into the future. The active, in-service fleet is expected to fall to 27,370 aircraft, just below 2015 levels, by the end of 2020, losing over 3,200 aircraft from year end 2019 to 2020. (In-service counts parked, but not stored aircraft). During 2020, Boeing's 737 family is expected to shrink to 6,300 active aircraft while Airbus' A320 is expected to shrink to 7,500 aircraft. As recovery takes hold, deliveries combined with aircraft returning from storage should combine to increase fleet strength to 2019 levels in 2021. By the end of 2030, narrowbodies lead the charge: the 737 family rises to 10,600 while the A320 reaches 11,900 in-service, exhibiting a 3.7% CAGR for each even after a projected 28% reduction in new deliveries from previous estimates. Fleet strength is expected to claw back at a subdued 2.4% CAGR led primarily by narrowbody resilience but hampered by high retirement rates.

Source: 2021 Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2020.

Active: Aircraft – Flying, temp parked, in service (not retired or stored)

Assumes no Max aircraft deliveries 2020 but assumes resumption in

747-400, A340, A330 (costly D-Check), retirements

Some stored aircraft will “come back to life” later and this counters depressed production.



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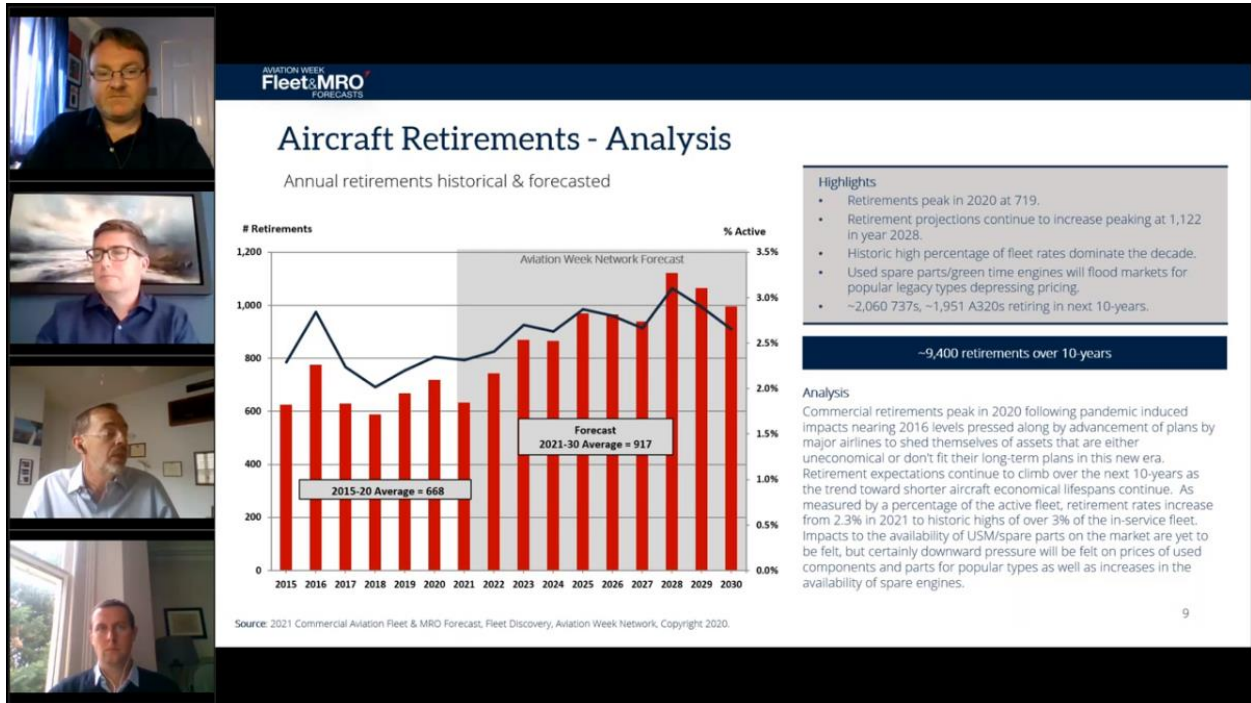
## Retirements

Retirements of commercial jets and turboprop aircraft, by month

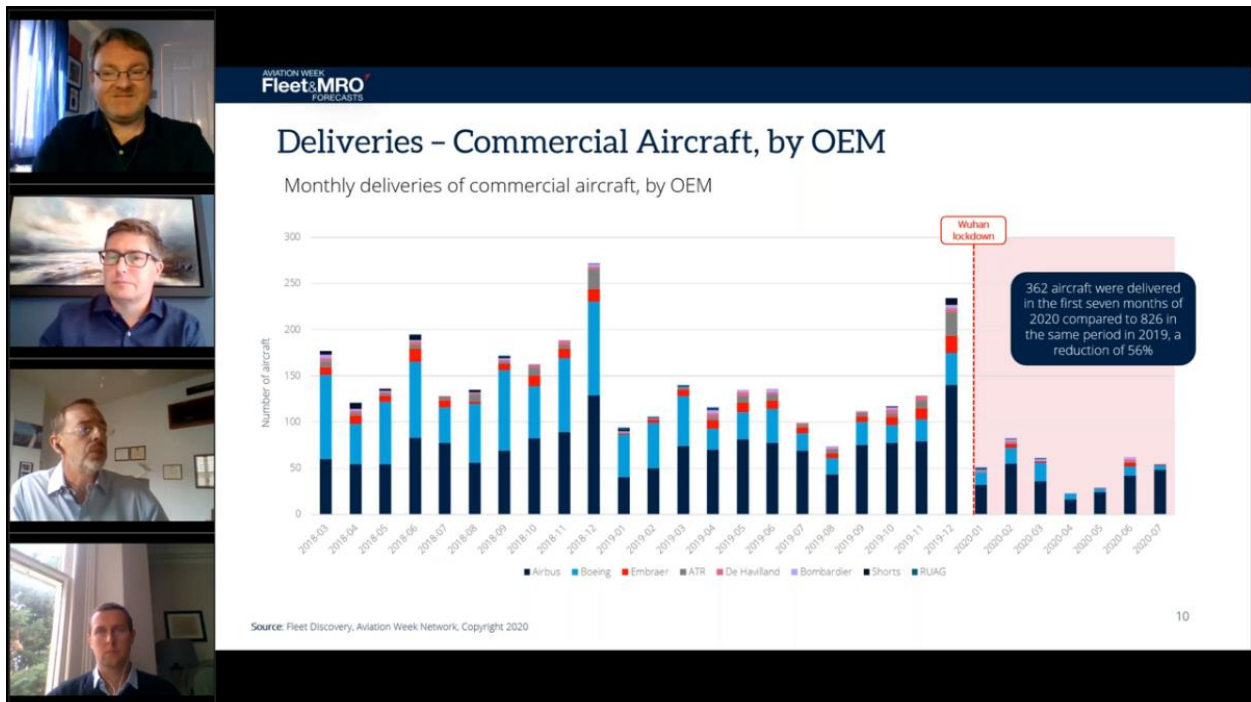


Source: Fleet Discovery, Aviation Week Network, Copyright 2020.


## Four engine aircraft “leaving the earth”



## Driven by aircraft age and economic life





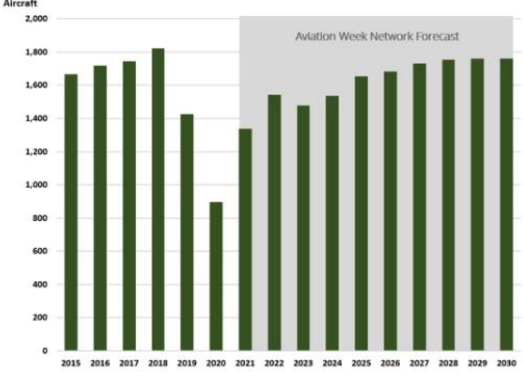



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## New Deliveries - Analysis

Annual deliveries historical & forecasted

**Aircraft**



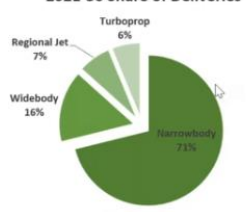
Aviation Week Network Forecast

Source: 2021 Commercial Aviation Fleet & MRO Forecast, Aviation Week Network, Copyright 2020.

**Highlights**

- 16,200 new deliveries over 10-years.
- Deliveries 30% lower than previous expectations.
- Narrowbodies lead recovery efforts, 71% share.



**2021-30 Share of Deliveries**



**Analysis**

Worldwide deliveries of ~16,200 commercial aircraft are projected over the next 10 years, down 30% from pre-pandemic estimates. Widebody delivery estimates are 42% lower and regional jet deliveries are 38% lower. Narrowbody deliveries consisting mostly of Airbus A320s and Boeing 737s now constitute 71% of all future deliveries, up from ~50% but have shrunk 28% lower than previously expected. Asia-Pacific (without China) will lead deliveries by value and by units while 2<sup>nd</sup> place North America continues apace with recapitalization. The A320 will hold a slight lead over the 737 deliveries and the 787 will outpace A350 deliveries in widebody aircraft.

Spikes are 450+ Max aircraft awaiting delivery



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## Most valuable programmes, 2021-2030 – by family

\$2 trillion worth of aircraft to be delivered over the next decade with \$1 trillion spent on MRO

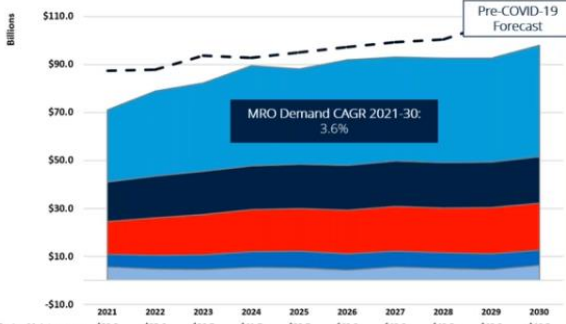


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## MRO Demand - Analysis

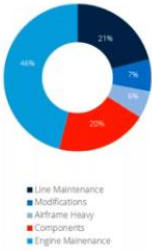
MRO aftermarket and the impacts from the pandemic



Category	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Engine Maintenance	\$30.2	\$35.6	\$36.7	\$41.7	\$39.7	\$43.9	\$43.3	\$43.5	\$43.3	\$46.5
Line Maintenance	\$16.3	\$17.3	\$18.0	\$18.2	\$18.4	\$18.6	\$18.8	\$18.9	\$19.0	\$19.2
Components	\$13.8	\$15.5	\$16.8	\$17.5	\$17.8	\$18.2	\$18.6	\$18.7	\$19.2	\$19.5
Modifications	\$5.2	\$5.6	\$6.1	\$6.4	\$6.9	\$6.8	\$6.6	\$6.6	\$6.5	\$6.4
Airframe Heavy	\$5.6	\$4.9	\$4.5	\$5.5	\$5.3	\$4.3	\$5.6	\$5.0	\$4.7	\$6.4
Pre-Covid Forecast	\$87.3	\$87.9	\$93.6	\$92.7	\$95.1	\$97.3	\$99.3	\$100.3	\$106.8	

Source: 2021 Commercial Aviation Fleet & MRO Forecast, Aviation Week Network, Copyright 2020.

Total MRO Demand



**Pre-COVID vs. COVID**  
MRO Demand 14% lower,  
\$36.6 billion across 2021-23

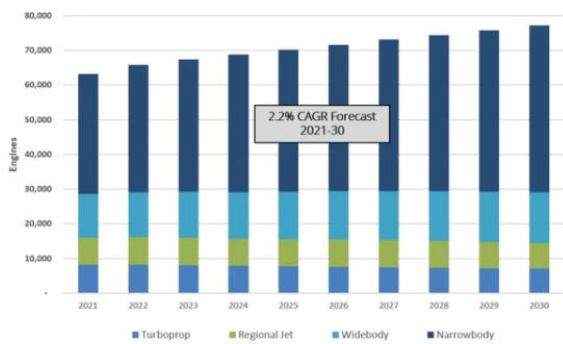
- Highlights**
- MRO grows at 3.6% CAGR 2021-30, worth \$878 billion.
  - Engine MRO demand is \$405 billion over decade and grows the fastest at 4.9% CAGR.
  - Component demand grows at 3.9% CAGR, \$175 billion demand.

**Analysis**  
After shrinking precipitously, MRO aftermarket demand post-pandemic totals \$878 billion over 10-years, growing at a 3.6% CAGR after factoring in fleet & utilization impacts from the pandemic. Down from nearly \$943B pre-COVID, the pandemic impacts are felt heavily 2021-23. 194,000 major MRO events are expected over the 10-year forecast (engine & airframe events) causing annual demand to increase from \$71B in 2021 to \$98B in 2030. Engine demand totals \$405B with the CFM56 family holding \$100B alone. Heavy Airframe events triggered by aircraft returning to storage produces a 3-year sinewave demand cycle. Component demand rises at 3.9% CAGR producing \$175B in demand.



## Engines

In-service fleet trends by engine size category



Source: 2021 Commercial Aviation Fleet & MRO Forecast, Aviation Week Network, Copyright 2020.

- Highlights**
- Engine fleet claws back at 2.2% CAGR.
  - The key driver of growth, narrowbody engines, grows at 3.8% CAGR.
  - Narrowbody engines comprise a 61% fleet share by 2030.
  - LEAP surpasses CFM56 by 2029.

**Engine Fleet increases**  
from 65,260 in 2020 to  
79,250 in 2030



**Analysis**  
After the active aircraft fleet shrinks by ~3,200 early in year 2020, the aircraft and engine fleet climbs out of the pandemic hole. The turbine engine fleet associated with active aircraft grows from 65,260 in year 2020, a 2.2% CAGR. The lead growth driver is the needs of an ever-increasing share of narrowbody aircraft. Growing at 3.8% CAGR overall, next gen narrowbody types LEAP and PW1000G will see 20% and 14% CAGRs respectively. By 2029, the LEAP engine will surpass the CFM56 as the most popular engine, 18,500 in-service. Fleet shares for narrowbody engines will increase from 53% to 61%. Meanwhile widebody engines grow slowly at below average 1.6% rate and turboprop and regional jet engines both have negative growth.



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## Engine MRO

MRO service events (overhauls vs. LLPs), demand and trends

**Highlights**

- Demand grows at above average 4.9% CAGR.
- \$405B in demand is expected.
- Engine MRO comprises 46% of all MRO demand.
- Nearly 116,000 engine service events needed over the decade.
- Turbofan LLP events grow at 5.6% CAGR.

116,000 Engine Service Events  
3.9% Event CAGR 2021-30

■ ATA 72 Engine Overhauls ■ ATA 72 Engine LLP ■ ATA 72T Engine Overhauls - Turbo ■ ATA 72T Engine LLP - Turbo

**Total MRO Events**

- ATA 72T Engine LLP (63%)
- ATA 72 Engine Shop Visit (15%)
- ATA 72 Engine LLP (19%)
- ATA 72 Engine Shop Visit (4%)

**\$405 billion in \$ Demand**  
4.9% Dollar Demand CAGR

**Analysis**

Engine MRO demand grows at the highest rate of any expense category, 4.9% and makes up 46% of total MRO demand over 10-years, worth \$405B. Turbofan overhauls make up 63% of all engine event activity, worth \$343B while LLP replacements make up 19%, worth \$46B. Turbofan LLP events grow at a 5.6% CAGR and their dollar demand grows at a 6.5% CAGR. Similarly, turboprop engine events number 21,300 and are worth nearly \$16B over the decade.

Source: 2021 Commercial Aviation Fleet & MRO Forecast, Aviation Week Network, Copyright 2020.



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## Heavy Airframe Demand

Heavy airframe maintenance demand will be driven by the timing of checks when aircraft return to service.

**Highlights**

- \$52 billion will be spent on heavy airframe maintenance by operators over the next decade.
- Around 46% of demand relates to maintenance on the Airbus A320 Boeing 737.
- COVID-19 groundings have created a bow-wave of calendar checks which will drive short term demand.

Billions

— A320 — 747 — 737 — A330/340 — 777 — 787 — 767 — ERJ170/175/190/195 — A350

**Analysis**

A total of \$52 billion is expected to be spent on heavy airframe maintenance (C & D Checks) over the next decade, with demand below average at a 1.3% CAGR over the decade. Annual demand is expected to rise from \$5.6 billion in 2021 to \$6.4 billion by 2030. Grounding and storage of commercial aircraft fleets will create deferrals of a significant number of calendar mandated airframe checks; however, as aircraft return to service, maintenance events will increase and synch. This trend will in effect create three-year demand cycles with a high of around 12,100 checks needed in 2021, falling back down to around 7,500 by 2023 before increasing again. This has the potential to create capacity constraints over the decade unless demand can be flattened out by changes to maintenance schedules over the next three years.

Source: 2021 Commercial Aviation Fleet & MRO Forecast, Aviation Week Network, Copyright 2020.

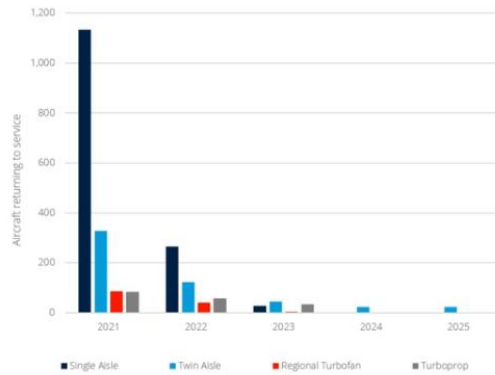
Downstream effects due in part to reintroduction of aircraft from storage





## Storage

Aircraft Returning from long-term storage post-pandemic



Source: 2021 Commercial Aviation Fleet & MRO Forecast, Aviation Week Network, Copyright 2020.

### Highlights

- Around half of the aircraft stored in the early stages of the pandemic are expected to return to service by 2023.
- Through the first three years of the forecast, a total of over 2,200 aircraft are expected to return from storage.
- Over half of the aircraft returning from storage in the forecast period will return by the end of 2021.

Long range widebody fleet will see the slowest return to service with aircraft gradually leaving storage over the next five years.



### Analysis

With thousands of aircraft taken out of service as a result of COVID-19, a key trend in the early years of the forecast will be the return to service of stored aircraft. A total of 2,270 aircraft are expected to return from storage in the first five years of the forecast. The vast majority of aircraft that are expected to be reactivated in the 2021-30 period are expected to return in 2021 with nearly 500 returning to the fleet by the end of 2022. Twin aisle aircraft are expected to experience the slowest return to service due to the persistent constraints on long distance, international travel.



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