

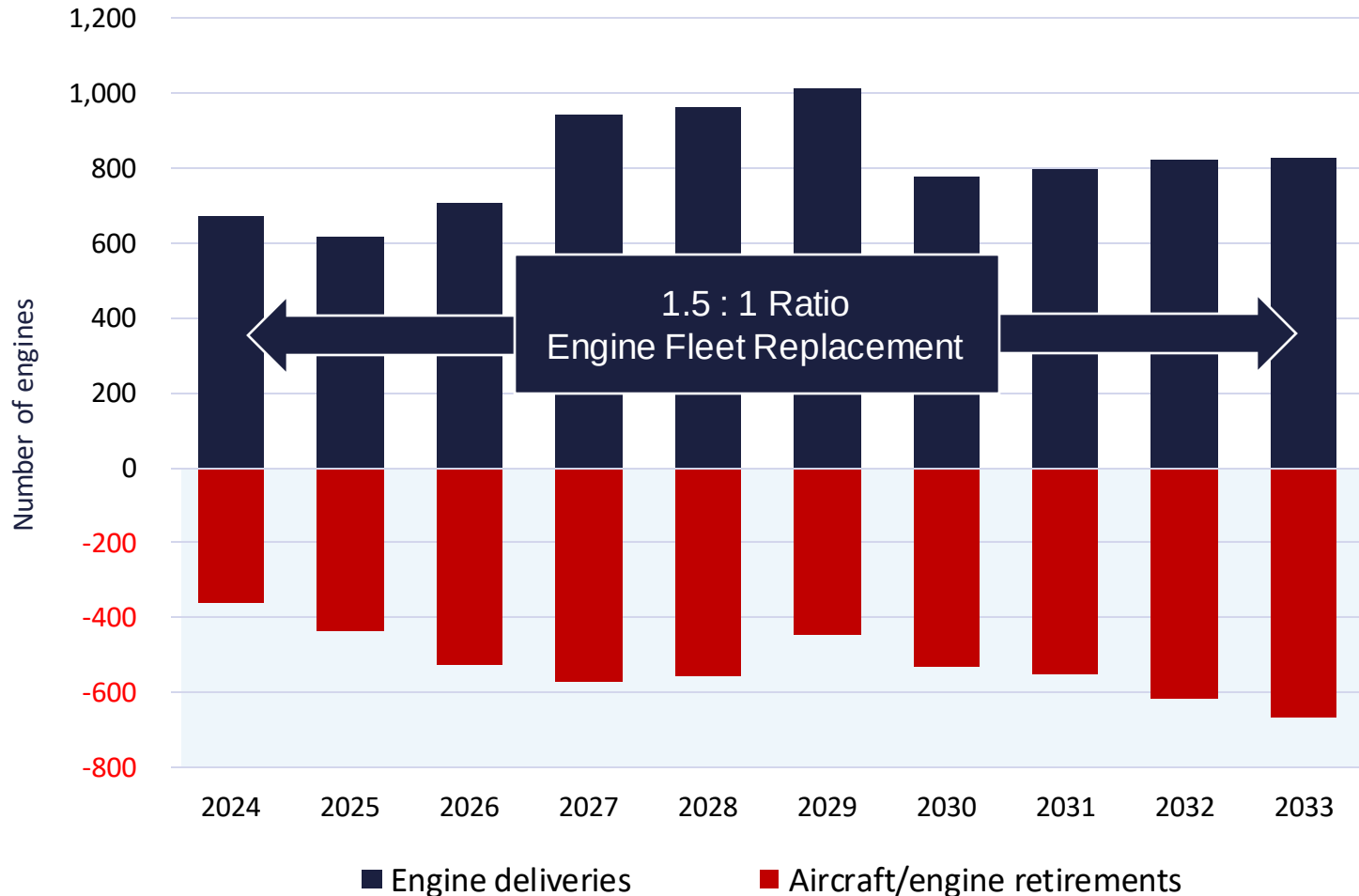
Datablast

Engine Overhauls

5 June 2024
London

Forecast: Europe's Engine Transition

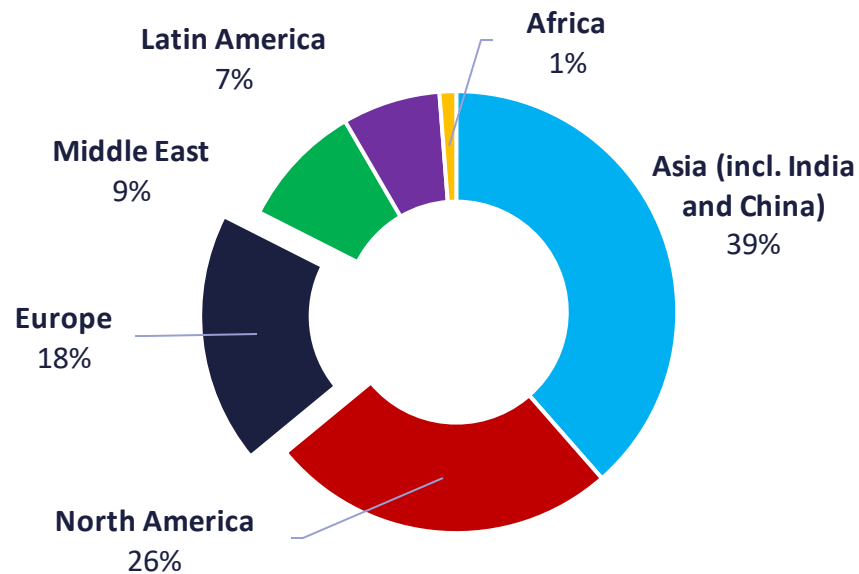
New engine deliveries vs. engines on retiring aircraft 2024-33



8,150 new engines required
in next 10 years

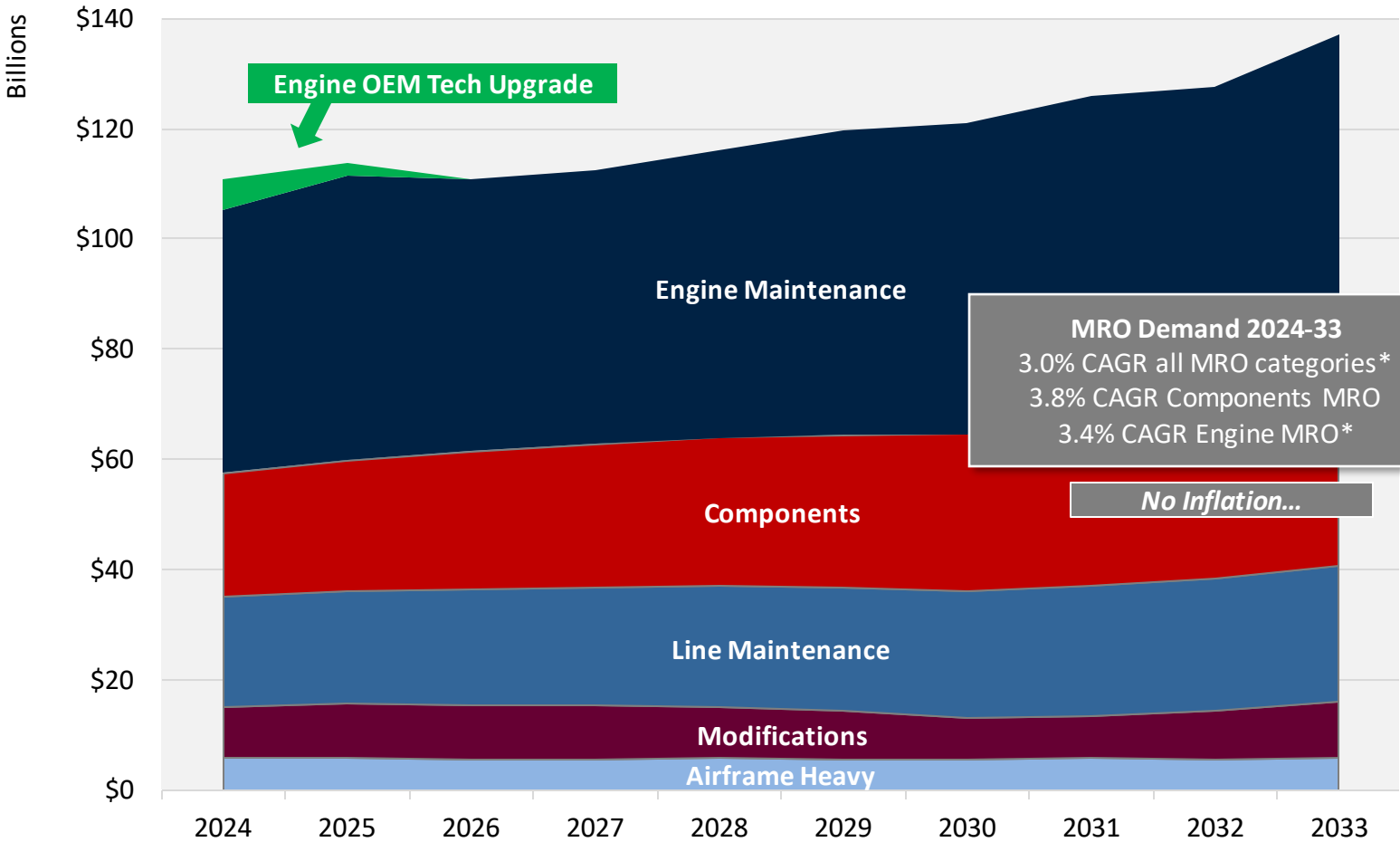
~5,250 engines associated with
projected retiring aircraft

World Engine Delivery Share



Forecast: MRO Demand Overview

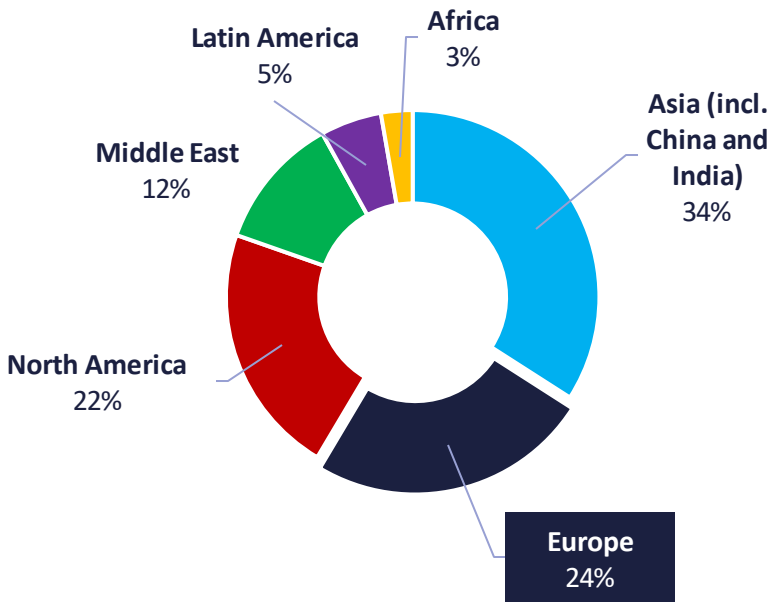
Global MRO aftermarket by category, constant US dollars



\$1.2T MRO Demand 2024-33

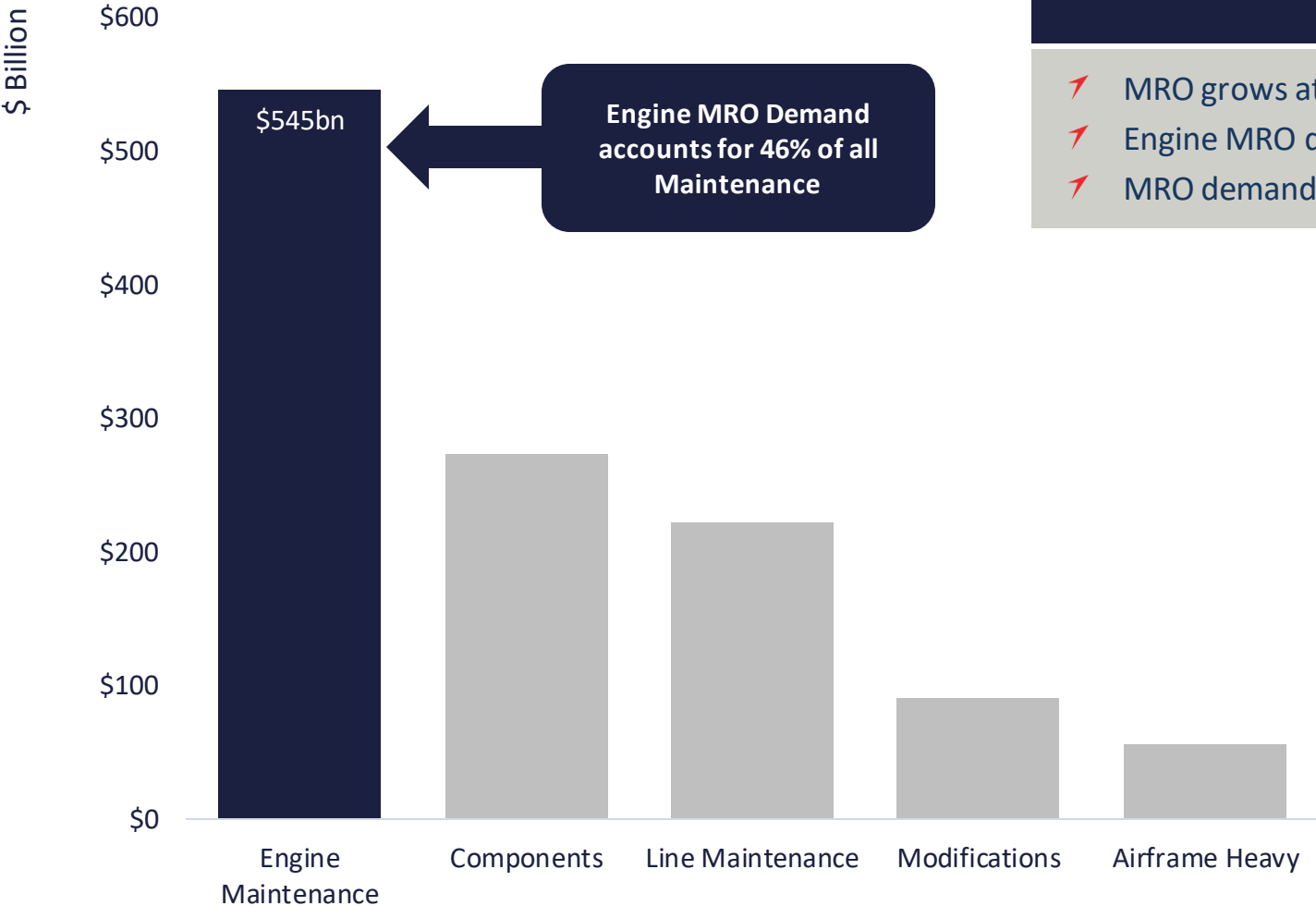


MRO Demand By Region

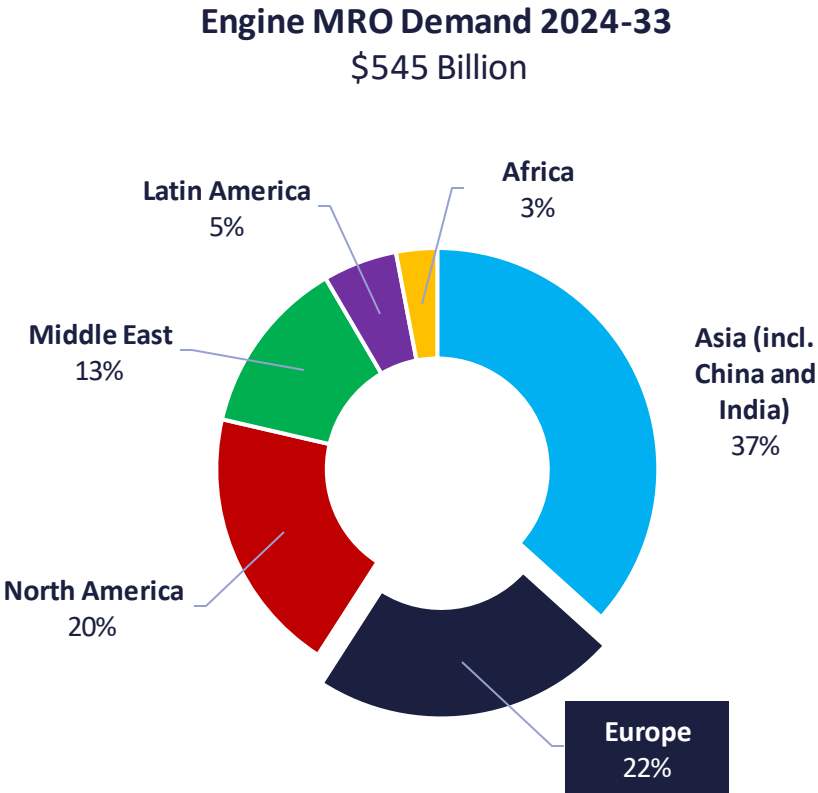


Source: 2024 Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.
Note: *2024 and 2025 engine technical upgrade events not included in CAGR calculation.

Forecast: Engine MRO Demand



Highlights	
🚀	MRO grows at 3.0% CAGR 2024-33, worth \$1.2 trillion.
🚀	Engine MRO demand is \$545 billion over the decade and grows at 3.4% CAGR.
🚀	MRO demand quickly ramps up in reaction to anticipated utilization increases.

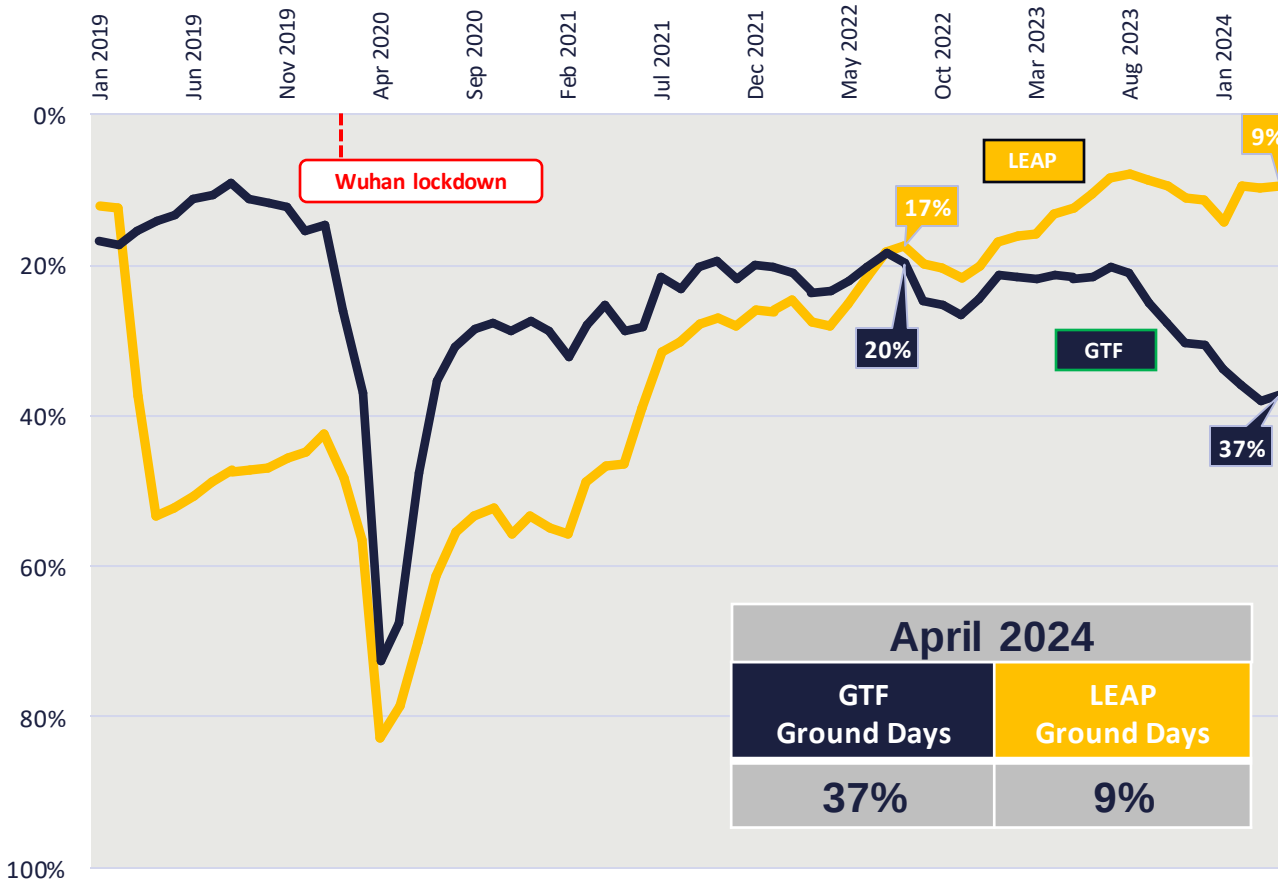


Source: 2024 Commercial Aviation Fleet & MRO Forecast, Fleet Discovery, Aviation Week Network, Copyright 2023.
 Note: *2024 and 2025 engine technical upgrade events not included in CAGR calculation. No inflation.

Engine “Hospital Visits”/ Durability

Unscheduled MRO aftermarket impacts for Pratt & Whitney GTF & CFM LEAP

Ground vs. Flying Days for GTF & LEAP Fleet



\$7.8 billion

Durability Issues Aftermarket Impacts for Pratt & Whitney and CFM

- GTF – Combustion/heat exchanger.
- GTF – HPT #1 and #2.
- LEAP – Fuel nozzles.

Aircraft/Engines 2024/25

Commercial Aircraft	Engine Model
737 Max 7/8/9/10	LEAP-1B
A220-100/300	PW1500G
A319/320/321neo	LEAP-1A
A319/320/321neo	PW1100G-JM
C919	LEAP-1C
E190/195-E2	PW1900G

MTU Eyes Faster Turn Times As GTF Groundings Plateau

“...TATs remain at 250-300 days, Pratt parent RTX said...”
...Fleet Discovery ...634 GTF aircraft on ground for at least 30 days.

Source: Aviation Daily, Aviation Week Network (30 April 2024)

PW1000G Groundings Continue To Rise As Latest FAA Mandate...

“..expected average [aircraft] of about 350...through 2026.”

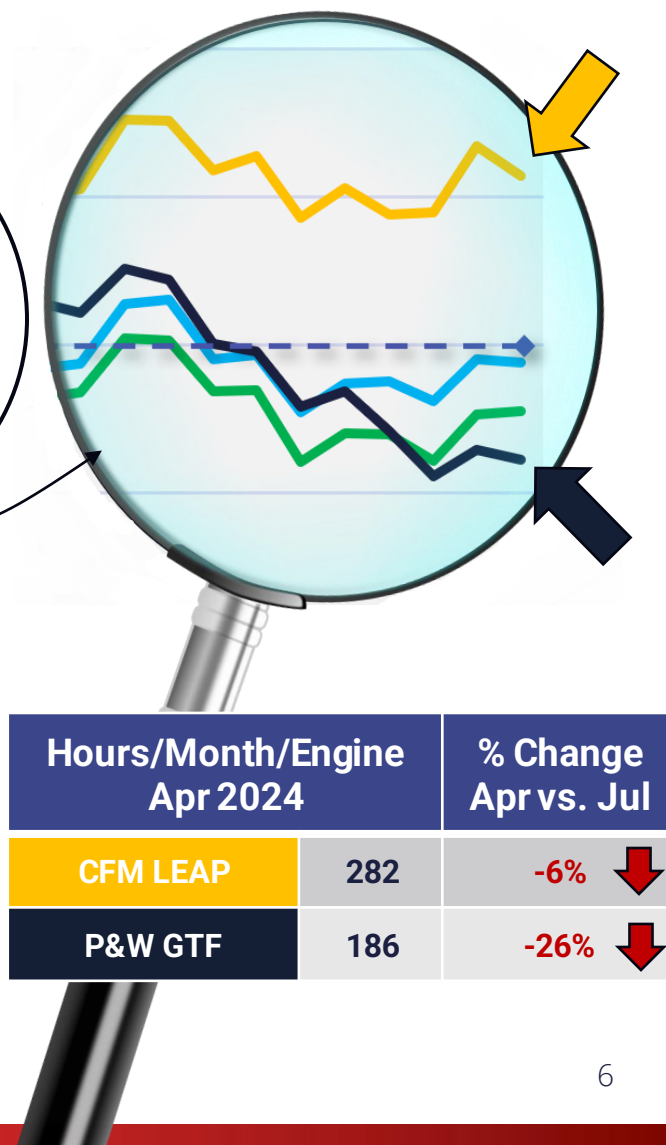
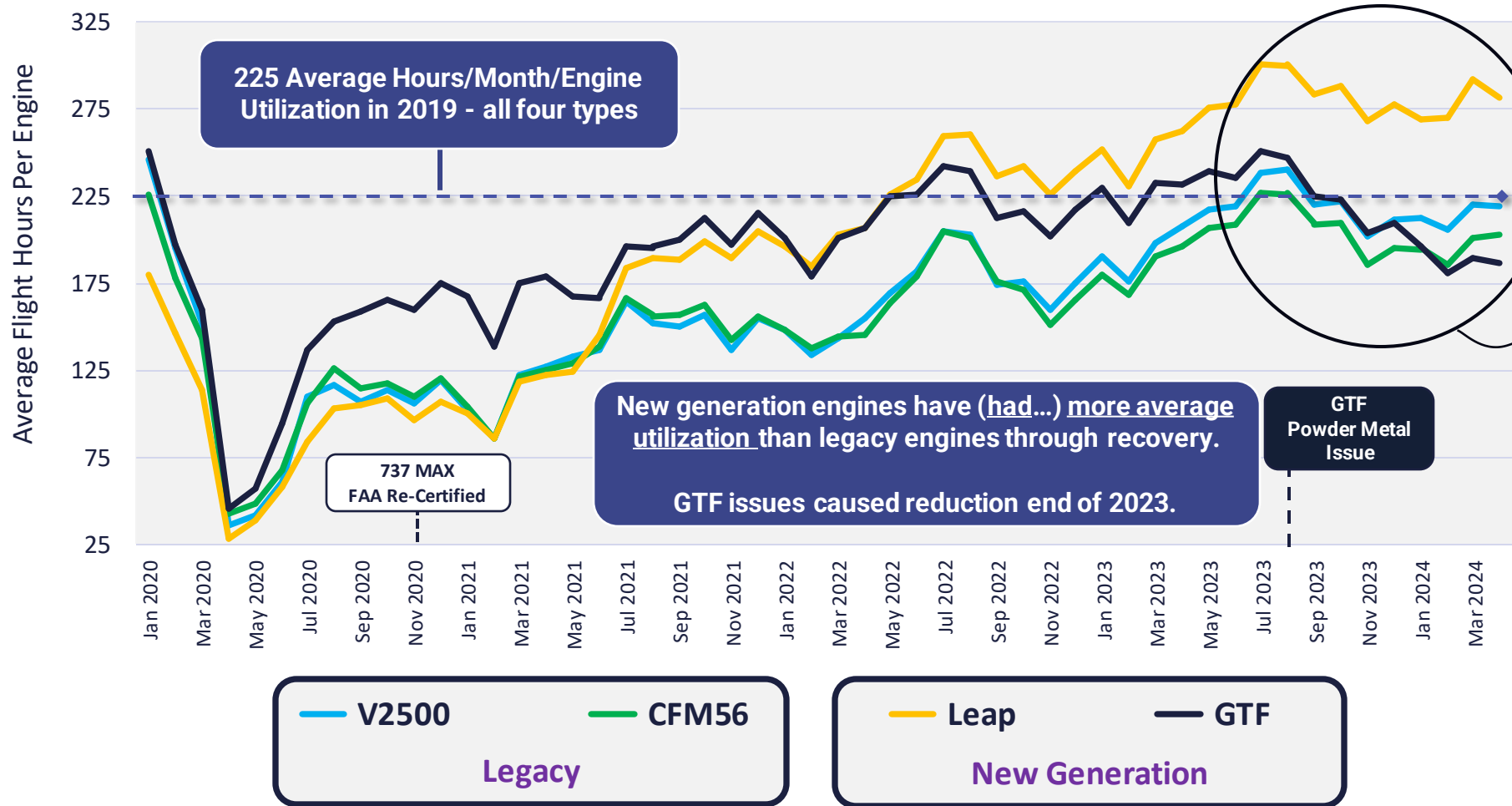
Source: Aviation Daily, Aviation Week Network (5 April 2024)

MROs Seek Solutions For New-Gen Engine Repair Challenges

Source: Aviation Daily, Aviation Week Network (30 April 2024)

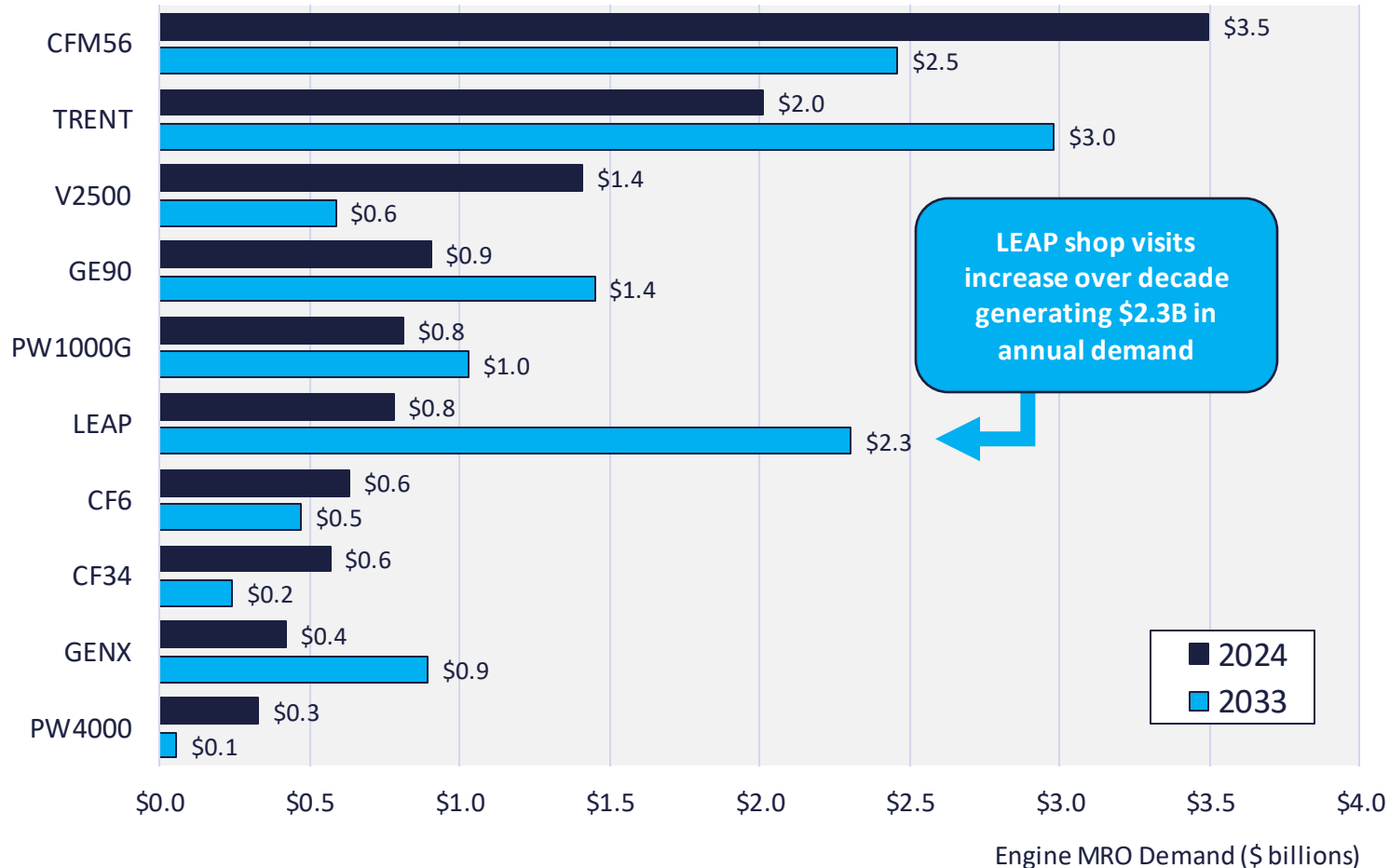
Single-Aisle Engine Utilization Jan 2020 – Apr 2024

Average monthly flight hours, per engine, new generation vs. legacy engines



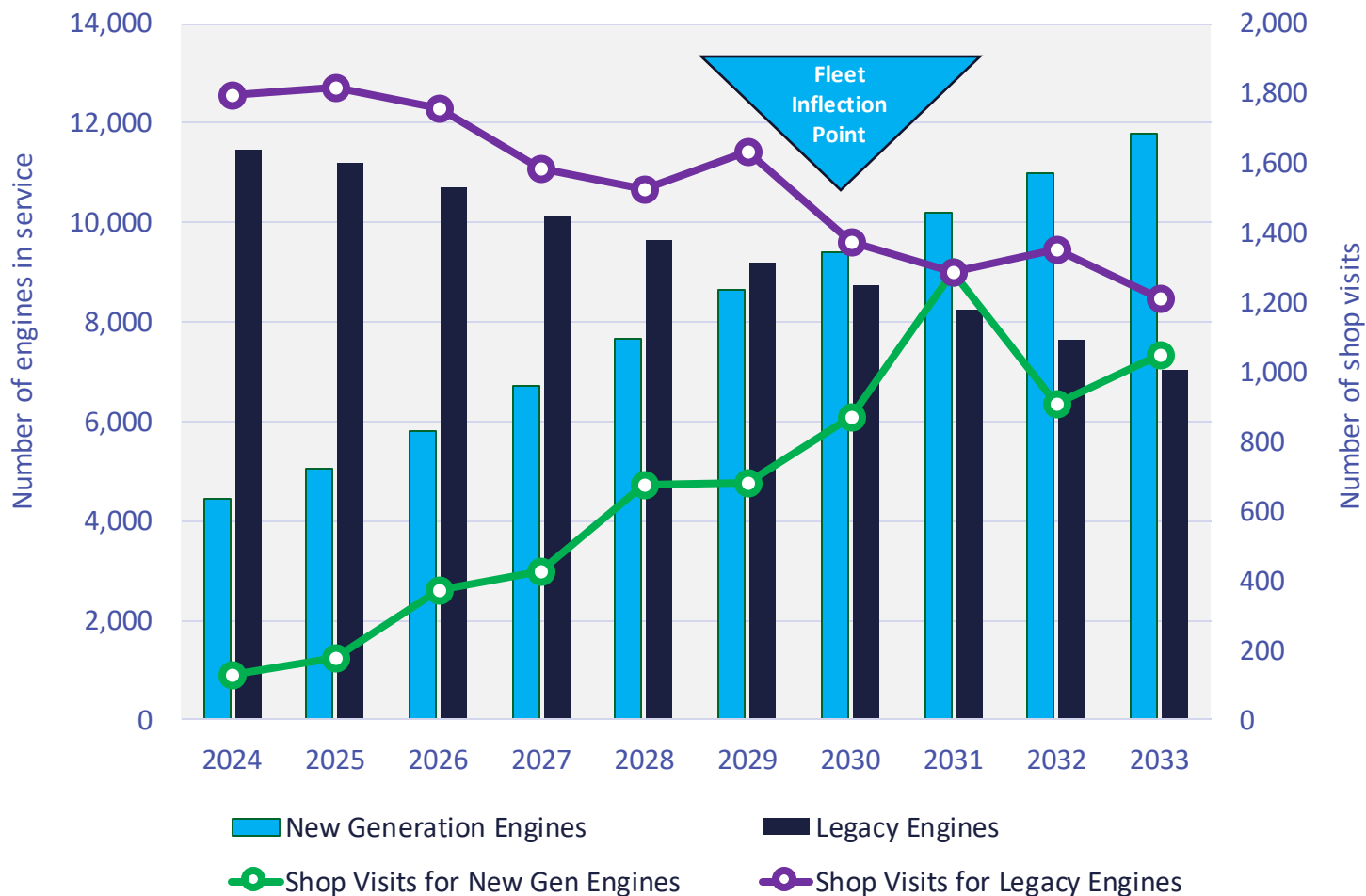
Forecast: Engine MRO Demand in Europe

Engine Family



Forecast: Engine Fleet & Shop Visits EUROPE

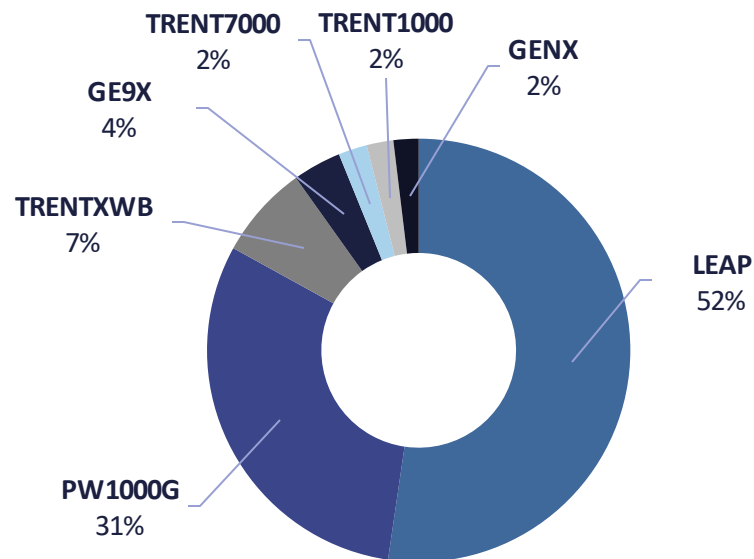
New generation vs. legacy fleet share forecast



Year 2030 inflection point new generation engines.

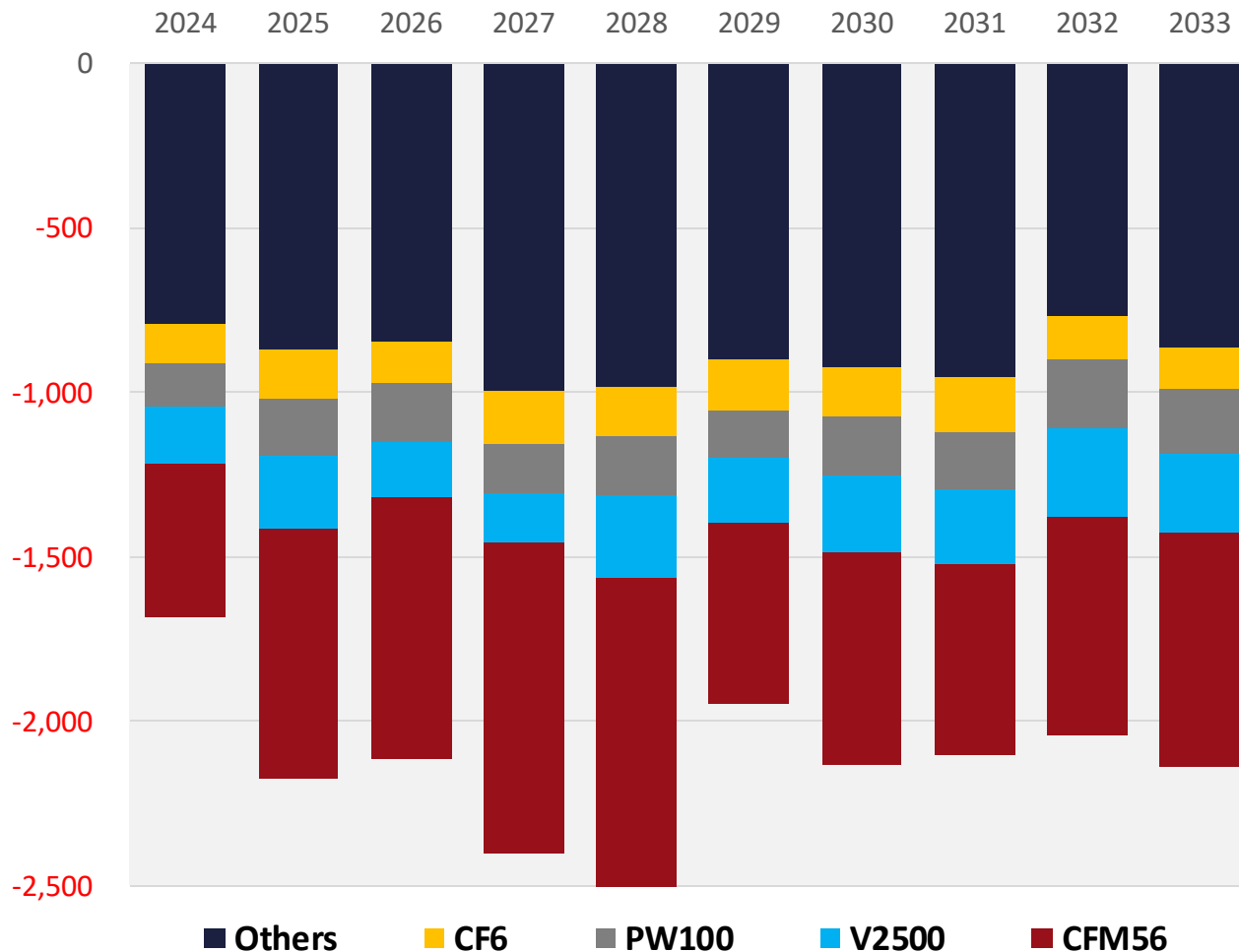
LEAP = 52% share new deliveries (A320 + B737)

New Gen Engine Deliveries in Europe



Forecast: Top Commercial Engines Coming to You Soon?

Engines worldwide associated with retiring aircraft: available as **green time spares** or USM?



Used spare parts/**green time** engines may depress pricing OEM/USM parts, and leases of popular legacy types.

- Topping the list: 7,000 CFM56 and 2,100 V2500 powerplants.
- Deferred maintenance may delay or accelerate a/c retirements.
- Future: downward pressure on the price of legacy spares, leases, shop visits, & USM.



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Fleets, Trends
and Projections



MRO Future
Demand



Predictive View
of Market Share