NEWSLETTER

When Engine Maintenance Value Becomes Aircraft Value

July 2026 | Shannon Ackert

Two aircraft can look identical on paper: same type, same vintage, similar lease profile, and similar airframe condition. But if one aircraft has engines with years of useful life remaining and the other is approaching a major shop visit, they are not economically equivalent.

The difference is not cosmetic. It is cash.

The first aircraft gives the next owner time before a major engine event. The second aircraft gives the next owner a bill. In today's market - where engine shop visits are expensive, spare engines are scarce, and turnaround times remain stretched - that difference can move the value of the whole aircraft.

That is the central point of this article: engine value is increasingly about time. The market is not simply paying for metal. It is paying for useful operating time before the next major engine cash event.

The last three articles in this series looked at engine shop visit rates, engine build standards, and why an engine is better understood as a portfolio of modules rather than a single uniform asset. This article follows that same logic one step further: how the condition of the engines can influence the value, lease economics, and exit strategy of the aircraft they are attached to.

KEY TAKEAWAYS

- Two similar aircraft can have very different values when their engines are on different maintenance clocks.
- Engine value is not just hardware value. It is the market value of reliable thrust, remaining LLP life, records, and time before the next major bill.
- Rising shop-visit costs do not automatically make aircraft more valuable. They matter only when the market will pay to avoid or defer that cost.
- The engine share of aircraft value has reset higher, but today's extremes should be treated as shortage-market signals rather than a permanent destination.
- Today's market strength has limits. Part-outs create supply, green-time engines create substitutes, and aircraft lease rates eventually need to reflect installed-engine value.

Start With the Simple Example

Consider two five-year-old narrowbody aircraft of the same type.

Aircraft A has engines with meaningful life remaining. The LLP stack is not near its limit; performance margin is still usable; records are clean; and no major engine event is expected in the near term.

Aircraft B looks similar from the outside, but its engines are approaching a major shop visit the buyer or lessor can see coming. Even if the airframe is in good condition, the aircraft carries a near-term maintenance burden.

From a traditional aircraft-age perspective, these aircraft may look similar. From an economic perspective, they are not. Aircraft A gives the next owner time. Aircraft B gives the next owner exposure.

That is why engine maintenance value matters: it is the value of usable engine life before the next major bill arrives.

A simple valuation lens helps: an engine is valuable because it can produce thrust reliably, because it can keep doing so before major money must be spent, because there is demand for the aircraft platform it powers, and because buyers trust its records and maintenance condition.

What Engine Maintenance Value Really Means

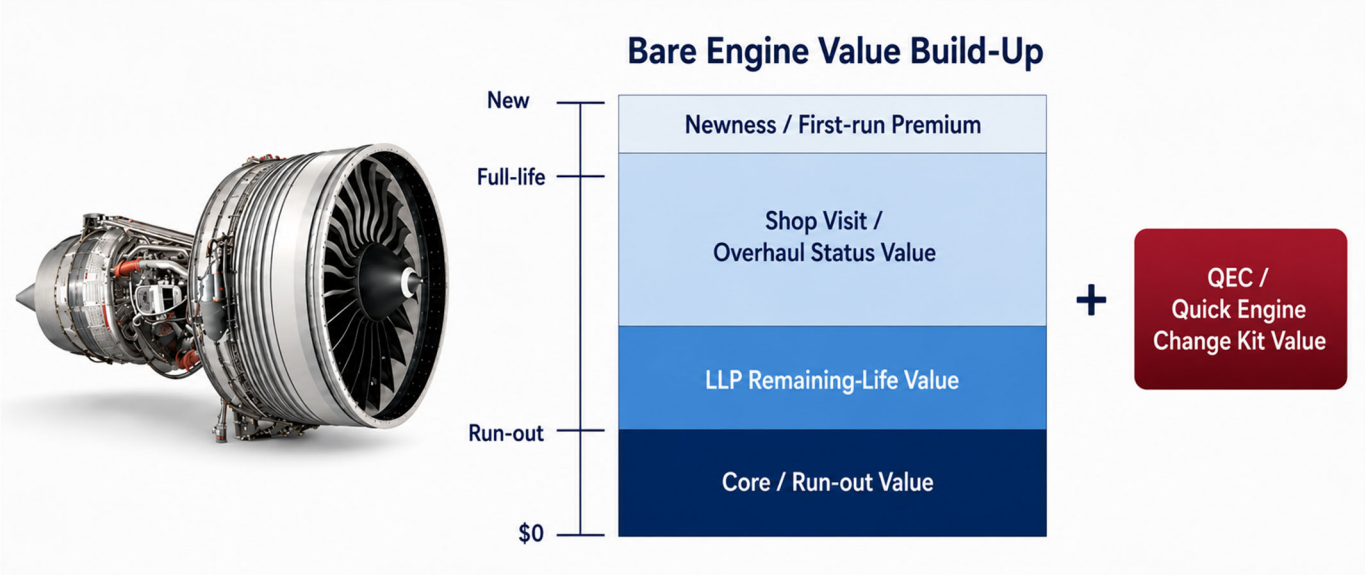
Aircraft are often discussed by type, age, and operator. Engines require a different lens. For engines, build year matters less than condition. An older engine with useful life remaining may be more valuable than a newer engine that is close to a major shop visit.

Engine value is commonly understood as a combination of several elements. At the bottom is core value: the engine data plate, hardware, and non-life-limited material. Above that sit the LLP stack value and the overhaul or performance-restoration status value. New engines may also carry a first-run premium, and QEC equipment can add value depending on how the engine is quoted.

The exact terminology matters to appraisers, but the business point is simpler: the core is the metal. Much of the remaining value is time, life, records, and confidence. Engine value is the market's view of how much useful, reliable, documented thrust remains before the next major cost event.

The magnitude is no longer marginal. For some mature narrowbody engines, maintenance and LLP-related value can represent well over half of total engine value. Recent industry estimates place selected examples in roughly the 58% to 67% range, compared with high-40% levels around 2010. That reinforces the point that the market is valuing not just hardware, but paid-for life embedded in the LLP stack, module condition, and shop-visit status. **Figure 1** sets out those layers in one place: core hardware at the base, with LLP stack value, restoration status, and any first-run or QEC premium stacked above.

Figure 1: What an Engine Value Is Made Of



Source: Adapted from AVITAS, Jet Engine Value Trends, Deutsche Bank 15th Annual Aircraft Finance & Leasing Conference, September 2025.

Figure 1 explains why two engines of the same model can be worth materially different amounts. The market is valuing more than just the engine type. It is valuing the remaining utility inside the engine.

It is also why engines and aircraft cannot be read on the same valuation logic. **Table 1** sets the two approaches side by side: whether build year matters, how much maintenance condition drives value, whether value declines smoothly with age, and whether the list price means anything.

Table 1: Why Engines and Aircraft Are Valued on Different Logic

Question	Aircraft	Engine
Does build year matter?	Yes. Value normally declines from factory rollout with the airframe's age.	Much less. Value follows condition, demand, and the engine type's life-cycle position.
How important is maintenance condition?	Important, but usually one part of the total aircraft value.	Critical. Maintenance condition can account for most of the engine's value.
Does value always decline smoothly?	Usually more age-driven, subject to market cycles.	No. Value can rise, hold, or fall depending on remaining life, spare scarcity, and shop-visit exposure.
Does the list price tell you anything?	Little. Published list prices are largely notional and disconnected from actual transaction values, whether for new or used items.	More, with a caveat. Spare engine values track OEM list prices fairly closely - but mainly while the type is still in production.

Source: Adapted from George Dimitroff, "A Deep Dive into Aircraft Engine Values," ISTAT Learning Lab / Cirium Ascend Consultancy, August 2024.

Why the Module Lens Still Matters

This is where the prior newsletter on engine modules becomes important.

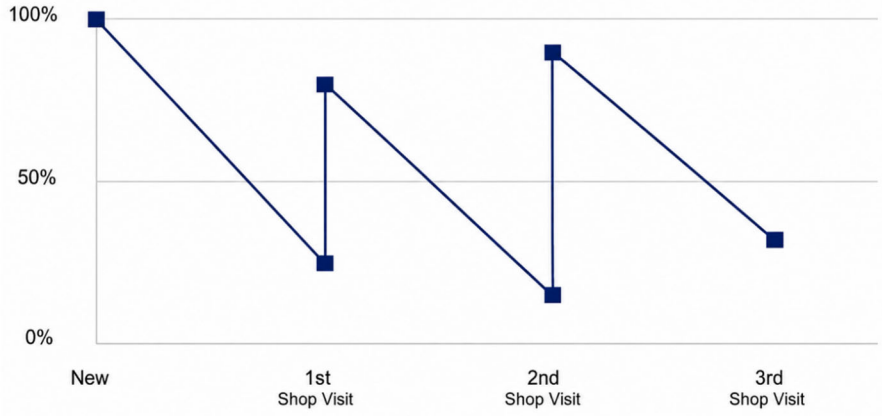
An engine may trade as a single asset, but its economics reside within the modules. The fan, compressor, combustor, turbine, gearbox, and LLP stack do not all age at the same pace. They do not all require the same work at the same time. A shop visit rarely resets the entire engine to new condition.

That distinction matters for aircraft value because a buyer is not simply asking, "Did the engine go through a shop visit?" The better question is: which modules were restored, how deeply were they restored, what LLP life remains, and which limitation is likely to drive the next event?

An aircraft with engines that have usable module life and aligned LLP life gives the next owner operating flexibility. An aircraft with engines carrying an exposed module or an LLP position poses a near-term cash problem for the next owner.

Figure 2 shows that engine value sits inside specific modules, LLP positions, and restoration choices - not just in the engine serial number.

Figure 2: Engine Economics Live in the Modules



Source: Ackert, Shannon. "Why an Aircraft Engine Is Not One Asset - It Is a Portfolio of Modules." Airliner Economics Series, June 2026.

The Market Is Paying for Time Before the Next Engine Bill

The Great Engine Cost Decoupling

Post-COVID market dynamics have laid bare a stark reality: engine maintenance costs are escalating well above general inflation. Latest-technology LLP (Life-Limited Parts) costs are climbing at +8% annually, while performance-restoration expenses hover between 6–8%. This vastly outpaces broader engine inflation indices, which sit closer to 3%.

Why this matters for asset valuation:

- **Direct Pass-Through:** Material parts account for roughly 75% of a standard overhaul invoice. OEM catalog hikes flow directly into shop-visit economics.
- **Shifting Value Equations:** Data from lessors and appraisers converges on these trends. As a result, the embedded maintenance value is consuming a much larger share of the total engine value equation.
- **The Bottom Line:** Engine MRO already commands 40–50% of total aircraft maintenance spend. Escalation in this specific bucket disproportionately moves the needle for the entire aircraft P&L.

The pressure is not limited to new-technology engines. Even mature, current-generation programs have seen sharp escalation episodes; CFM56-5B/7B LLP escalation, for example, reached double-digit levels in 2023. Those spikes matter because they raise the financial value of avoiding the next major engine event.

However, these spikes should not be treated as a permanent run-rate. The better conclusion is balanced: post-pandemic market dynamics have reset baseline engine maintenance costs higher, but the most severe escalation periods are more likely shortage-market anomalies than a stable long-term trend.

The Distinction Between Cost and Value

While the cost side is clear, the value side is more subtle. A higher future shop visit cost does not automatically make a physical engine asset more valuable. Instead, value shifts to the ability to avoid, defer, or monetize that future cost.

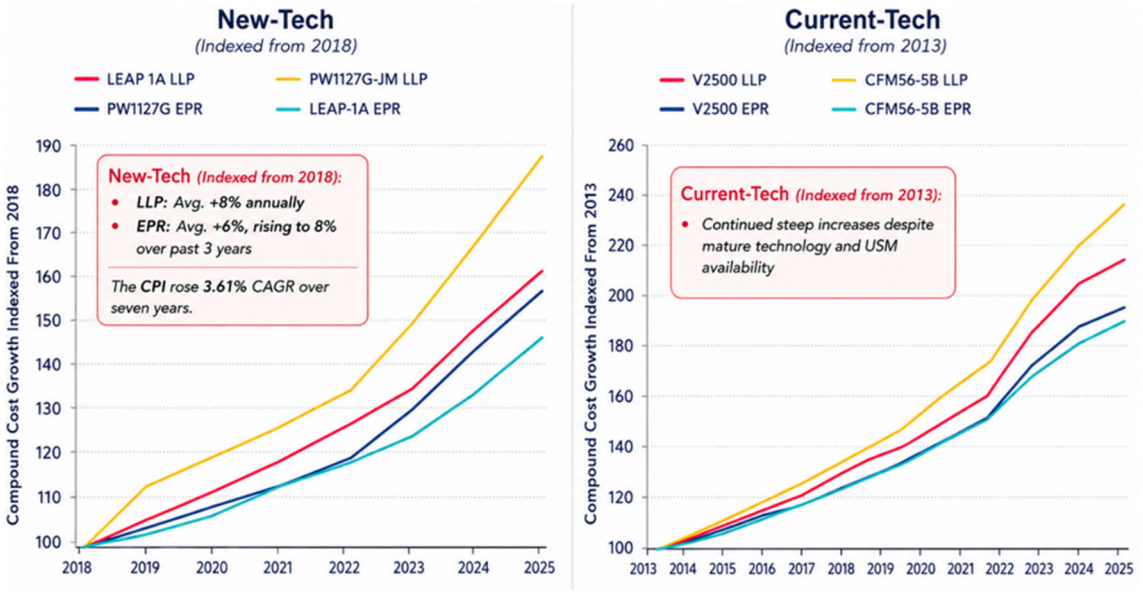
If spare engines are readily available, shop capacity is open, and green-time engines are plentiful, the market will not pay a premium for avoided maintenance. But when spare engines are scarce, turnaround times (TAT) are long, and airlines desperately need capacity, remaining engine life becomes highly monetizable.

Ultimately, a higher shop-visit cost translates into asset value only if three conditions coexist:

1. The market needs spare engines to maintain capacity;
2. Asset owners can trade or lease those specific engines; and
3. Whole-aircraft lease rates are high enough to justify keeping them installed.

The market is not paying for inflation. It is paying for time. **Figure 3** makes one point: the escalation in engine maintenance costs is not theoretical. It is already changing the economics of engine ownership, maintenance reserves, redelivery exposure, and aircraft exit decisions.

Figure 3: Engine Maintenance Escalation



Source: SMBC Aviation Capital, "Engine Maintenance Escalation," Plane Insights.

Same Aircraft, Different Engine Clock

Return to Aircraft A and Aircraft B. In a constrained market, Aircraft A's remaining engine time does more than defer a maintenance event - it supports leaseability, redelivery position, and remarketing flexibility. Aircraft B's near-term engine bill does not disappear; it resurfaces in a lower purchase price, stronger maintenance compensation, tighter redelivery terms, or a decision to monetize the engines separately.

That is why the old shorthand - "same type, same age, similar value" - is increasingly dangerous. The engine clock can now dominate the aircraft clock.

What Is Left for the Airframe?

Analysts frequently compare the value of a paired set of engines against the total value of the aircraft. While useful, the more critical business question is much simpler: **After the engines are valued separately, what value remains for the airframe?**

This remainder represents the market's implied value for everything outside the powerplants: the fuselage, landing gear, APU, cabin interior, technical records, operating platform, and the option to keep the aircraft flying as an integrated asset.

The Implied Airframe Residual Test

Implied airframe residual = Aircraft Market Value – Combined Value of Both Engines. *Note: To ensure accuracy, apply a consistent basis across the equation, matching maintenance condition, QEC treatment, and the specific valuation standard (Market vs. Base Value).*

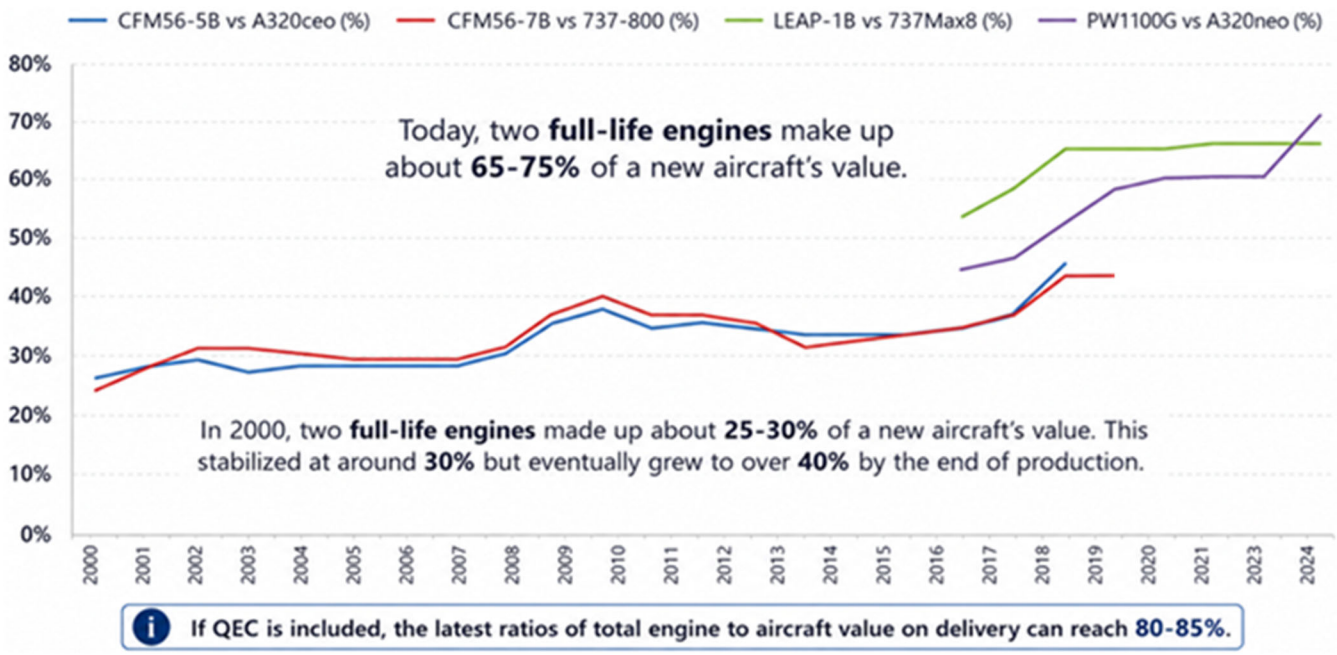
When that residual is wide, the asset behaves like a normal aircraft investment. When it compresses, the owner starts asking whether the engines are worth more inside the aircraft or outside the aircraft.

Historical market data provides an instructive cross-check. For previous-generation narrowbodies, two full-life engines typically represented roughly 25% to 33% of a new aircraft's total value. For latest-technology narrowbodies, that powerplant share is materially higher.

While the exact percentage fluctuates based on appraisal methodologies and engine life status, the macro trend is undeniable: asset value is becoming heavily concentrated in the engines, leaving the airframe to trade closer to its utility stub value.

As **Figure 4** illustrates, this structural shift across prior- and new-generation narrowbodies is fundamentally rewriting the risk profile of aircraft ownership.

Figure 4: Full-life Engine Pair Value as Share of Aircraft Value



Source: Cirium Ascend Value Trends and Ascend Analysis. Note: Ratios shown represent the sum of two full-life spare-engine market values, excluding QEC, divided by the full-life new-aircraft market value on delivery for each year shown.

Structural Shift vs. Cyclical Premium

This higher concentration of asset value in new-generation engines should not be misread as a permanent "new normal." While the comparison is new-to-new — implying the gap isn't just an old-versus-new aircraft artifact - today's valuations are heavily influenced by short-term engine mechanics: full LLP life, first-run status, and ample remaining green-time utility.

To evaluate where values are heading, we must separate the structural from the cyclical:

- **The Structural Driver (Durable):** Permanently higher OEM catalog LLP values, escalating shop-visit material costs, and exclusive OEM aftermarket control that makes engines harder to substitute.
- **The Cyclical Driver (Temporary):** Severe spare engine shortages, tight global shop capacity, and early-generation reliability fixes.

The structural baseline is here to stay, but the cyclical shortage premium will eventually normalize.

Data from a recent IATA/Emerton analysis underscores this reality. New-generation engines are currently running well short of mature time-on-wing expectations. GTFs, for instance, are averaging 5,000 to 6,000 cycles, compared with a mature target of 15,000 to 20,000 cycles. Early-life maturity issues drive a significant portion of today's surge in shop visits. As OEM durability fixes mature, this spike will ease, leaving a more predictable structural baseline driven by steady fleet growth.

This does not imply that every aircraft with high-value engines should be immediately slated for teardown. Rather, it forces owners to continuously evaluate the two competing uses of the same asset: keep the aircraft whole to capture yield via lease rates, or extract and monetize the powerplants to capture engine value directly.

Worked Example - Two Five-Year-Old Aircraft, Same Type (Illustrative)

To see how this tension plays out on a balance sheet, consider two identical five-year-old narrowbodies trading in the same market:

- **Aircraft A (Fresh Utility):** This aircraft recently completed a heavy engine restoration, leaving it with years of remaining green-time utility. If its two engines are appraised at $36 million and the implied airframe residual is $14 million, the whole aircraft trades at $50 million.
- **Aircraft B (Imminent Exposure):** The same vintage and type, but both engines are within 18 months of a heavy shop visit and LLP replacement costing roughly $7 million each. The market discounts this engine pair to $23 million. Applying the same $14 million airframe residual, the whole aircraft trades at $37 million.

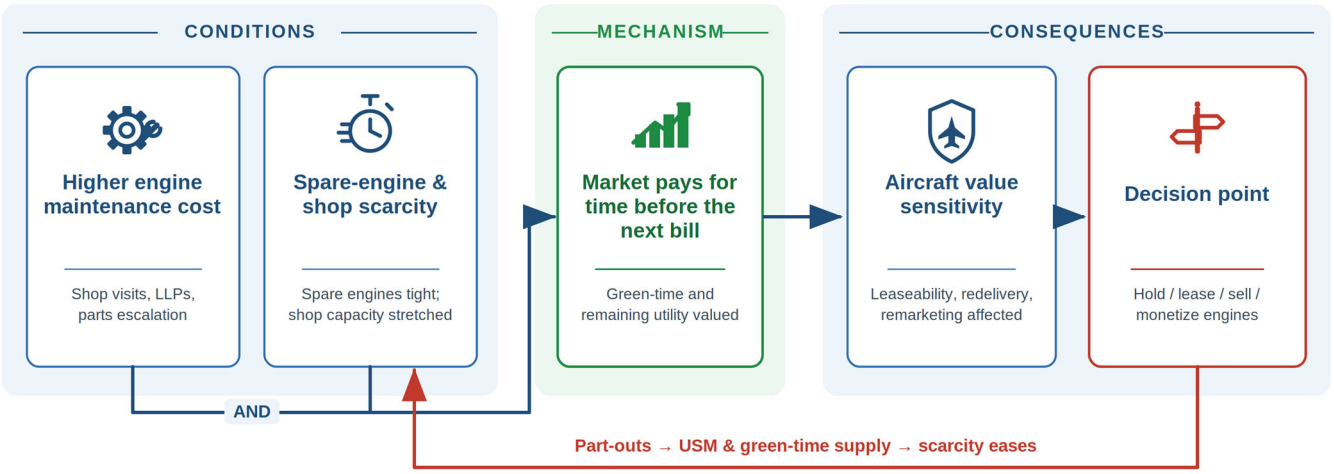
Two identical aircraft, yet they trade $13 million apart. The entire variance sits in the engine maintenance clocks.

Age alone cannot identify this financial exposure. While this worked example holds the airframe residual constant to isolate the engine clock, real-world residuals are highly dynamic.

For instance, a young aircraft might trade for $45 million while its engine pair is cyclically valued at $40 million, leaving an implied airframe residual of just $5 million. This does not mean the airframe is suddenly worthless; it means the market has temporarily front-loaded intense scarcity value into the engines. When that scarcity premium fades, the engine value will contract, and the implied airframe residual will widen. The physical airframe didn't change the marketplace; however, it simply reallocated the scarcity premium.

As **Figure 5** summarizes, this transmission mechanism dictates that maintenance cost inflation translates into aircraft value only when market scarcity, timing, and capacity constraints align to make the remaining engine utility highly monetizable.

Figure 5: How Engine Maintenance Value Becomes Aircraft Value



Source: Author.

Why Newer Engines Are Not Always Simpler

New-technology engines delivered meaningful fuel-burn improvements, but those savings need to be underwritten alongside engine durability, shop-visit cost, and supportability. When engines come off wing

sooner than expected, operators need more spare coverage. When shop visits take longer, each spare engine supports fewer aircraft. When parts are expensive or in short supply, engines with useful life remaining become more valuable.

Part of the fuel-burn advantage of new-generation narrowbodies can be offset if engine shop-visit costs rise and intervals shorten. A simple illustration makes the point: if a mature narrowbody engine shop visit costs $5 million and supports 20,000 engine flight hours. In comparison, a new-technology equivalent costs 25% more and supports only 15,000 hours; the maintenance cost per engine flight hour rises by roughly two-thirds. That does not negate the efficiency case for new aircraft. It means fuel savings and engine maintenance exposure must be evaluated together.

This is why poor reliability can have an ironic market effect. It is bad for operators, dispatch reliability, and maintenance planning, but it can increase the value of spare engines and green-time engines because the market needs immediate thrust. Recent market commentary reinforces the demand-side pressure: strong traffic demand, heavy utilization of younger aircraft, and GTF-related A320neo/A321neo groundings are exactly the conditions in which spare engines and green time become more valuable.

When Engine Value Tests the Aircraft Case

The extreme case occurs when a relatively young aircraft's engines can earn more outside the wing than inside it. At that point, the aircraft begins to look less like the primary asset and more like the delivery package for engine utility. While this is not the historically normal state of the market - as global aircraft shortages, high traffic demand, and robust whole-aircraft lease rates still support keeping iron in service - the decision boundary has fundamentally moved.

Early-life aircraft part-outs provide clear evidence of this shift:

- **Cirium Ascend** data tracked roughly a dozen A320neo-family aircraft torn down by mid-2025, largely driven by the Go First bankruptcy fallout.
- **Ishka** research placed the full-year 2025 total at nineteen A320neos, alongside two six-year-old A321neos and at least one young A220.

This activity is concentrated almost entirely in PW1100G-powered aircraft, where the ongoing engine grounding crisis has made spare powerplants scarce and extraordinarily valuable. This trend is accelerating as the fallout from **Spirit's** collapse feeds younger, GTF-powered A320-family airframes directly toward possible teardown and engine harvesting.

The exact crossover point depends on inflation, engine type, maintenance status, and whole-aircraft market premiums. However, the macro implication is clear: engine economics will continue to test the whole-aircraft case long after today's cyclical shortages normalize.

The engine share of aircraft value is no longer just a statistic. It is a clear signal that the market is aggressively retesting the highest and best use of aviation assets.

Why the Trend Has Limits

High engine values are fundamentally self-correcting over time. When spare powerplants are scarce and capital-intensive, the market responds via predictable economic feedback loops:

1. Accelerated early-life part-outs inject fresh engines and component supply back into the market.
2. Operators aggressively burn through remaining green-time utility on existing assets to defer capital expenditure.

3. The eventual introduction of mature reliability fixes and expanded MRO shop capacity gradually forces the market back toward equilibrium.

While this adjustment is painfully slow while aircraft remain scarce and shop backlogs persist, the mean-reverting pressure is real.

To map out the future, we must split today's elevated valuations into two components:

- **The Cyclical Layer (Temporary):** The intense scarcity premium born from the acute, near-term shortage of spare engines.
- **The Structural Layer (Permanent):** The reality that new-generation engines cost more to own, maintain, and overhaul. As an asset family matures, its powerplants will naturally consume the majority of the integrated asset's value.

An influx of spare engines will deflate the cyclical scarcity premium, but it cannot undo the deeper structural shift.

My view: Engines now command a larger permanent share of total aircraft value than in previous generations. This structural shift is here to stay. However, cases where the implied airframe residual compresses to near-zero are symptoms of a market temporarily out of balance, not a permanent new normal. The market can remain tight longer than models predict, but it cannot escape the economic forces that these extreme valuations set in motion.

What Would Prove This Wrong?
To stress-test this thesis, savvy market participants should monitor leading operational indicators rather than lagging headline appraisal values.

- **The Bear Case for Structural Shift (Cyclical Compression):** Watch USM supply and spare-engine lease rates first. If early-life part-outs successfully flood the secondary market and OEM/airline acceptance of latest-gen USM accelerates, spare lease rates will soften, proving the current crisis was primarily cyclical.
- **The Bull Case for Structural Shift (Durable Higher Baseline):** If spare-engine lease rates continue their upward trajectory through 2027 and into 2028 despite fleet growth, it proves the structural cost baseline and OEM pricing power are significantly larger than currently assumed.

What This Means in Practice

The practical implication is to underwrite where the value actually sits. The relevant question is no longer only aircraft type and age; it is how much useful, documented engine time remains and whether the aircraft economics support that value.

Audience	What changes	Practical question
Operators	Engine workscopes are no longer isolated maintenance events - they are high-stakes fleet valuation decisions. While a minimum-workscope "short-build" preserves cash today, it severely compromises future leaseability, redelivery compliance, and ultimate asset exit options.	Operators must identify which specific tail numbers are structurally protected by remaining engine time, and which are carrying an imminent, unbacked cash exposure.
Lessors	Portfolio residual risk is now heavily concentrated under the cowling. Asset valuation, lease pricing models, maintenance reserve collections, and redelivery cash compensations must be aggressively stress-tested against physical engine conditions rather than generic asset tables.	Managers must continually assess whether LLP stacks, module life, technical records, and next-event timing genuinely support the integrated aircraft's appraised value.

Investors	The aircraft should be analyzed as a combined airframe-and-engine position, not a generic aircraft exposure.	The primary underwriting question is whether the airframe utility drives the target asset's current value, the scarce engine positions, or the latent arbitrage option to harvest and monetize the powerplants independently.
MRO Providers	High material costs and OEM catalog pricing are fundamentally shifting customer requirements from heavy, full-performance overhauls toward targeted module swaps, hospital shop visits, green-time substitution, and aggressive integration of Used Serviceable Material (USM).	MRO marketing teams must determine whether a customer is purchasing long-term engine utility or simply buying a minimal bridge to the next commercial asset event.

Ultimately, the overarching strategic mandate for this market is discipline over scale. In an environment where value is heavily concentrated in the powerplants, the winning asset owner is not automatically the one commanding the largest headline fleet. It is the owner who most precisely audits where the value lies, tracks remaining engine utility clocks, and accurately calculates when the best financial answer is to keep the aircraft flying versus harvesting the engines independently.

Bottom Line

Aircraft values are becoming hyper-sensitive to the embedded maintenance value sitting within their engine cowlings. The structural reason is simple: engines have become phenomenally expensive to restore, spare assets remain critically scarce, shop turnaround times are severely prolonged, and the marketplace is highly incentivized to pay a premium for physical life that avoids the next multi-million-dollar shop bill.

Crucially, maintenance cost inflation does not automatically translate into whole-aircraft asset value. A higher future shop-visit cost affects current asset pricing only when the broader marketplace is actively willing to pay a premium to avoid, defer, or monetize that specific exposure.

When spare powerplant supply is tight, engine demand is robust, and traditional aircraft lease rates fail to fully capture the standalone value of installed engines, the fundamental economics of ownership shift.

The permanent tactical lesson for the modern aviation executive is this:

1. Aircraft Value tells you what the asset trades for today.
2. Engine Maintenance Value tells you exactly how much of that total position is protected by time before the next major cash event.
3. Implied Airframe Residual Value tells you whether the market is still valuing the asset as a traditional aircraft, or increasingly as a delivery package of engine utility with a depreciated aluminum frame attached.

Watch the implied airframe residual most closely. When it compresses toward zero, the market is not telling you the airframe has suddenly become worthless. It is flashing a clear, unmistakable signal that the cyclical engine shortage premium is nearing its absolute peak.

Selected Sources and Further Reading

- SMBC Aviation Capital. "Engine Maintenance Escalation." Plane Insights.
- Dimitroff, George. "A Deep Dive into Aircraft Engine Values." ISTAT Learning Lab / Cirium Ascend Consultancy, August 2024.
- AVITAS. "Jet Engine Value Trends." Deutsche Bank 15th Annual Aircraft Finance & Leasing Conference, September 2025.
- Cirium. "For the Aircraft Engine Market, Newer May Not Be Better - Yet."
- Cirium Ascend. Young-narrowbody part-out and teardown fleet data, 2025 (Rob Morris).
- Ishka. Aircraft part-out and teardown trading research, 2025-2026.
- Emerton and IATA. "Single Aisle Aircraft Engines MRO: Strategic Levers to Address Supply Chain Challenges," June 2026.
- Alton Aviation Consultancy. "Aviation Industry Trends, Fleet Outlook, and Engine Leasing Market Dynamics." Engine Leasing, Trading & Finance Americas, February 2026.
- IBA. "What to Look for When Valuing an Engine."
- Ackert, Shannon. "What the Engine Shop Visit Rate Reveals About Current-Generation Engine Durability." Airliner Economics Series, April 2026.
- Ackert, Shannon. "Engine Build Standards: Why Shop-Visits Are a Capital-Allocation Decision." Airliner Economics Series, May 2026.
- Ackert, Shannon. "Why an Aircraft Engine Is Not One Asset - It Is a Portfolio of Modules." Airliner Economics Series, June 2026.