

Study indicates higher residual value for engines maintained with OEM parts and authorized repairs

A recently concluded study performed by the International Bureau of Aviation (IBA)[†] shows that engines maintained with original equipment manufacturer (OEM) parts and repairs retain a 20–50% higher resale value than those maintained with Parts Manufacturing Authority (PMA) content and/or Designated Engineering Repairs (DERs).

The study, which was conducted from late 2011 to early 2012, examined asset resale prices for CF6-80C2,* CFM56-3/-5C* and CF34-3* engines. Data was collected and analyzed from actual engine trades as well as interviews with lessors and traders.

“What we found is that there is a significant negative financial impact on engine re-marketability and sale price when the engines contain PMA parts and DER repairs, especially within the engine core,” says Dr. Stuart Hatcher, who leads valuation and risk at IBA. “Evidence shows that OEM-certified maintenance protects engine asset value over the long-term.”

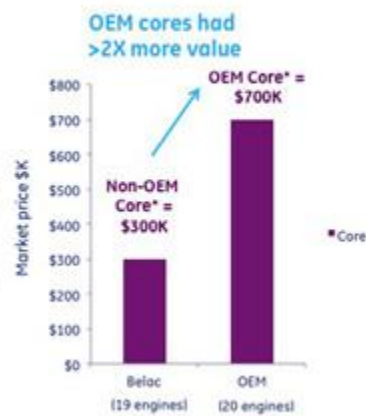
“So if you’re buying, selling or leasing engines, consider this in your engine valuation,” he adds. “Leasing companies should enforce terms requiring use of OEM parts and repairs—as this will help protect your asset value and overall investment throughout the engine’s lifecycle.”

IBA Example – CFM56-3 engines with PMA blades traded for less value

Example 1

CFM56-3 cores with **OEM** parts had **more than 2X** the market value of cores with non-OEM parts

- ▶ Comparison of **actual trade values** of CFM56-3 engines containing Belac blades vs. engines with OEM configuration



Source: IBA TRUEngine Value Study, January 2012

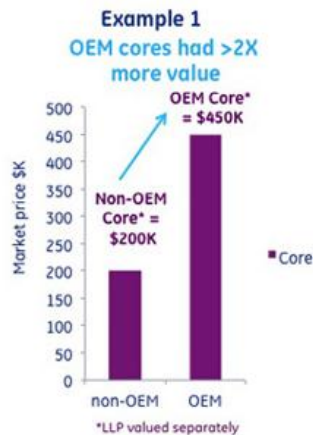
IBA Examples – CFM engines with DER in core sold for part-out at reduced value

Example 1

2 CFM56-3B2 cores with **non-OEM repairs (DER)** sold for part-out at prices **>50% less** than those cores that contained OEM parts

Example 2

1 CFM56-3C1 engine with non-OEM repairs (DER) sold for part-out; sale price was **23% less (\$400K) than market value** for OEM engine at time



Source: IBA TRUEngine Value Study, January 2012

IBA Examples – CF6-80C2 engines with PMA/DER trade for less value

Example 1

CF6 **non-OEM parts & repairs** in core can have **~50% less value**

- Actual trade values of (8) engines sold for part-out with **known or suspected PMA HPT blades & DER** in core
- Non-OEM cores valued at **>50% less** than cores with OEM parts

Example 2

(2) engines returned from lease had **DER in HPT & LPT**. Lessor did not allow use of non-OEM parts/repairs, so cost to operator to **replace all non-OEM parts was \$200K & \$300K per shop visit (15-20% more cost)**

- Lessor also charged Operator with "inconvenience fees" so cost to Operator to replace DER was more than savings they received from using DER



Source: IBA TRUEngine Value Study, January 2012

"It's clear that the IBA study results are a significant indicator related to engine residual value, but it's also important to note that the study did not include an evaluation of the impact of these influencing parts that were not maintained to OEM standards on LLP (life-limited parts) values," says Tom Levin, General Manager of Material Services at GE Aviation. The list of critical parts that can influence the LLP parts in the engine are published in Chapter 5 of the GE and CFM Engine Manuals.

Levin adds that GE and CFM's TRUEngine* designation offers a way to ensure operators that engines have been maintained in an OEM configuration and to OEM standards. It also provides optimal technical and product support for GE and CFM International* powerplants—with fully transferable status in the event of an engine sale or new lease.

The TRUEngine program is offered to operators of GENx,* CF6 and CFM56 engines at no charge.

Visit www.geaviation.com/services/truengine for additional information on the TRUEngine program for GE engine lines. To find out more regarding the CFM TRUEngine program, visit www.cfmaeroengines.com/services#truengine.

Contact: **Angela Jarczyk** angela.jarczyk@ge.com

† Study commissioned by GE

GE's *Service Solutions* eNewsletter can be accessed online at:
<http://www.geaviationservicesolutions.com>

© 2013 GE. All rights reserved. GE Engine Services, Inc. is a wholly owned subsidiary of GE. GE and the GE Monogram are trademarks of GE.

* CFM and CFM56 are trademarks of CFM International, a 50/50 joint company between GE and Snecma (Safran group). * GENx, CF6 and CF34 are trademarks of GE. All other unregistered and registered trademarks are the property of their respective owners.

