

A paradigm shift has occurred in the last year in which a significant increase in interest in PMA parts has been seen in South East Asia, Europe, and South America. PMA parts are also now being manufactured for almost every ATA chapter on the aircraft. Meanwhile, OEMs have increased their competitiveness with new service offerings, threatening the position of PMA manufacturers. *Jason Holland* investigates the long-term effects of recent market developments.



## The world is opening to PMA parts

Since the 1950s, the Federal Aviation Administration (FAA) has been granting Parts Manufacturer Approval (PMA) for third-party manufacturers to produce replacement parts for aircraft. Without these 'PMAs', aircraft parts would be exclusively designed and manufactured by Original Equipment Manufacturers (OEMs), granting them a monopoly in the replacement parts market. To achieve certification, PMA manufacturers must demonstrate to the FAA that a part is the same in all respects to a design in a type-certificated product or, through test and computation, that the part is the same as, or better than, the one it seeks to replace.

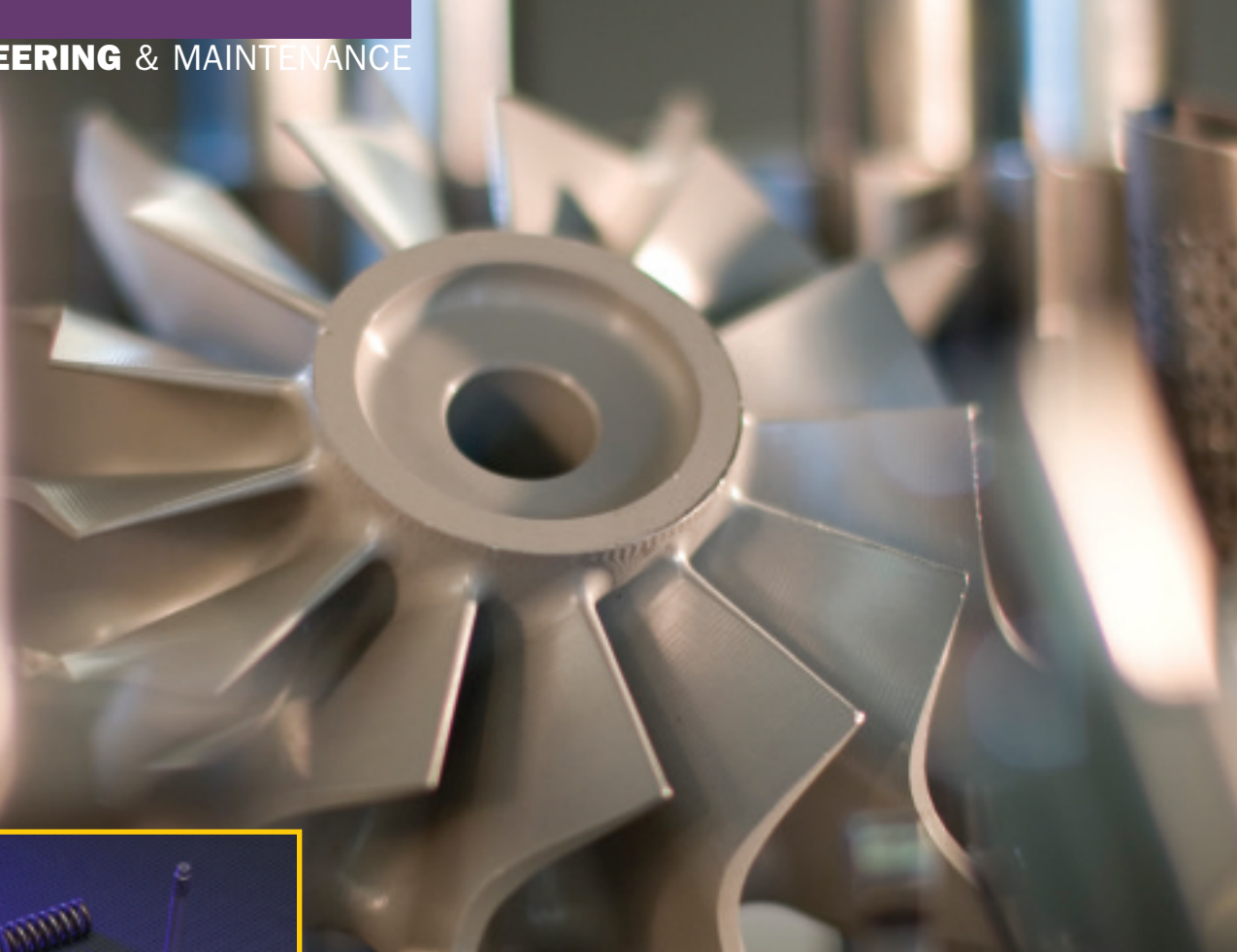
Advocates of PMA parts state that they provide cost savings of between 30 to 50 per cent, in addition to the design improvements; most OEMs assert that sticking with their parts will prove cheaper in the long-term, while pointing out the potential safety risks of using PMA parts. There are many sides to this debate, and it is one that has been particularly raging since the 1990s.

It was in this decade, and the one preceding it, where economic pressures forced airlines to actively seek any cost saving wherever they could find it. With PMA parts offering the saving they did, and the increasing prices of OEM spare parts, it is little wonder that PMA manufacturers began to see an escalation of interest. That is, once the FAA had embarked on a programme insisting that approval was necessary for *all* parts, and so the authority began issuing more PMAs as manufacturers clamoured to comply with the new regulations.

Despite stringent approval procedures being put in place, part of the reason why PMA parts have not gained a wider acceptance is because of concerns over the safety of using such parts. The FAA has done much in the last couple of years to put these fears to bed. In 2008, a Repair, Alteration and Fabrication Team (RAFT) study was conducted after the FAA found that OEMs were starting to put information in their maintenance manuals and instructions for continuous airworthiness that was deemed

'anti-PMA'. A Special Airworthiness Information Bulletin (SAIB) was issued as a result, stating that it is not up to the engine manufacturer to say that the installation of a PMA part is wrong or invalid, and effectively, that the FAA's primacy must be respected.

Since that time, OEMs have been more cautious in expressing their safety arguments. As Kate Schaefer, senior vice president - business development & marketing at PMA manufacturer HEICO Aerospace, says: "OEMs have dropped the 'safety' aspect of their anti-PMA campaign because it has really proved to be a non-issue. The FAA confirmed this in the 2008 RAFT report; any further discussions will revolve around economics and not safety." Jeff Dark, VP sales & marketing at PMA manufacturer Jet Parts Engineering, states that while "OEMs are still trying to throw out FUD (fear, uncertainty, and doubt) about the safety of PMA", he sees "the fact that Pratt & Whitney is doing CFM PMAs, and Goodrich is doing Hamilton Sundstrand PMAs" as a "bit of 'waving of the white flag'".



*While PMA parts have traditionally been a US phenomenon, more airlines across the globe are opening up to the idea of using them.*

Nevertheless, OEM fears about PMA parts safety still linger. When asked about these concerns, engine OEM CFM International emphasised that “it is critical that system interactions be assessed when part-level design changes are introduced”. The company related the following story: “In 2009, a CFM56-5 life limited part (LLP) failed in operation. This particular engine included a mixture of CFM parts, PMA parts and non-CFM (DER) repaired parts. This combination from multiple suppliers resulted in design changes being introduced to the engine operating system. As a result, the LLP was operated under conditions that had not — and could not have — been evaluated by CFM.

“Maintaining continued engine airworthiness requires proper assessment of system interactions. Engine manuals and shop-level criteria defined by CFM are based on the fundamental premise that parts installed in the engine conform to CFM’s design. CFM’s Instructions for Continued Airworthiness (ICA) do not and cannot account for new design features, new materials and/or new manufacturing processes introduced via PMA or non-CFM DER repairs. As a result, the analysis and conclusions included in CFM’s Instructions for Continued Airworthiness (ICA) simply do not address these configurations. Therefore, the use of CFM ICA to mixed configuration engines is an area of great concern to CFM.”

Despite the FAA’s best intentions, then, the issue of safety of PMA parts is clearly not over yet. Nate Dalton, who oversees PMA Development at Wencor, notes that while “the days are past where an OEM can say arbitrary things about PMA”, he does not believe that OEMs are resigned to the validity of PMA parts. “They will continue to do battle in every way possible. To them, this is their aftermarket,” he concludes.

### Time perspectives

Turning now to economic considerations, the PMA debate here revolves around the immediate ‘short-term’ savings PMA parts offer, as opposed to the OEMs’ ‘long-term’ benefits. There is no doubt that using PMA parts offers cost savings over the OEM equivalents. However, many contracts in the industry do not allow the use of PMA parts, in order to protect and maintain aircraft liquidity, lifetime re-marketability, and residual value. Such contracts are particularly prevalent in the lessor community, and provide a significant impediment to increased acceptance of PMA parts.

OEMs have also developed various ‘total support’ contracts and ‘power by the hour’ programmes which preclude the use of PMA parts and aim to help owners to differentiate asset value. And so the OEMs can argue that in the long run it makes economic sense to stick to OEM parts and maintain complete control over



*Generally associated with the engine, it is now possible to find a PMA part available for almost every ATA chapter on the aircraft — an expansion driven by customer demand.*

assets. While such initiatives are never explicitly stated to be an attempt to counteract the PMA manufacturers, the implication is pretty obvious.

In theory, the increased competitiveness of the OEMs is a good thing for the free market. Customers' right to choose between using OEM and PMA parts is a major development in driving competition, and in turn innovation. If a healthy balance is maintained then there should be reason for all to celebrate. John McKirdy, regional sales director of the Americas at Chromalloy, endorses this sentiment but warns that should the OEMs "seek to block competition and the airlines participate just in long-term total service packages", the operators would be "at a disadvantage in the marketplace".

Jet Part Engineering's Dark, however, is critical of the OEMs' motivation in trying to wrest away more control of the aftermarket. "OEMs are working very hard to retain and increase their market share. The power by the hour and 'total services' packages are attempts to shut out competition, whether it be alternative part suppliers or third party overhaul facilities," he comments. "I'm confident that operators understand that they'd be better served long term to continue to support their alternative suppliers. The existence of competition is what is bringing OEMs to the negotiating table in the first place."

The OEMs would argue — legitimately — that they have every right to improve and enhance their service offerings in response to the market situation. Indeed, when asked about its efforts to stay competitive, CFM responded with a long list highlighting its "continuous investment in the product line" and other support improvements. HEICO's Schaefer agrees that the OEM strategies to control the aftermarket through total service packages are "a very valid commercial tactic" that "attempts to control both the spread of PMA and DER but also to control the influence of the independent MRO shops". But she cautions: "The success of these programmes will depend very much on whether customer service and innovative cost control and product improvement is genuinely part of the deal. If the programmes are nothing more than a very thinly veiled attempt to control the market place and eliminate all forms of competition, then market forces will eventually win through and the airlines will choose to go in an alternate direction."

There will always be a place for PMA manufacturers, though, according to Wencor's Dalton. "It is not so much a strategy to detract from PMAs than to win market share," he says of the OEMs' initiatives. "They will be successful in some cases, even able to deliver what they promise. But, they will not be able to deliver what they promise to everyone. That is

where independent shops and aftermarket PMA parts step in to save the day.”

In the end, PMA manufacturers will have to take a philosophical approach to the increased OEM threat. “The OEMs are competing aggressively for market share, and they are leveraging their competitive advantages — breadth of line and MRO capability,” says Dave Kvasnicka, president of Aviation Component Solutions. “While that certainly poses challenges for us, it’s great for our customers. We’ll just have to continue to improve our offering.”

### Global expansion

Even if the PMA manufacturers were to see a loss of business in the US as a result of these OEM strategies, it is likely that in the coming years it would be made up for in other regions of the world, where PMA acceptance and usage is rapidly developing. “There is an incredible amount of untapped potential regarding the use of PMA, and in our opinion, it’s only a matter of time until many of the remaining barriers come down,” says Dark. “We’re seeing much more interest from South East Asia, Europe, and South America than we were even one year ago. This paradigm shift is coming through education and passage of time, where potential customers are consistently seeing their competitors benefit from the cost savings and service levels provided by PMA manufacturers.”

The global recession has also had a significant impact, with the tough economic environment accelerating the trend of global acceptance of PMA. “Several of the airlines that had been on the fence regarding PMA part use have decided that they can no longer forego the savings provided by PMA parts,” asserts Kvasnicka.

In Europe, a number of “regulatory misunderstandings and other barriers” have prevented further use of PMA, according to Wencor’s Dalton. However, in the Middle East and Asia major strides are being made as airlines there begin to “see the benefit to their beleaguered airline profitability”. Kvasnicka agrees: “Over the last 18 months or so, several Asian airlines have started to use PMA parts.” However, it is in China where, despite having “it’s own set of hurdles to navigate in a non-western setting”, contracts are currently being signed, and it is here where we “will see the most growth through the next few years”, says Dalton.

HEICO’s Schaefer largely concurs with this analysis. “We have interest coming from a number of different places at the moment, particularly in Asia and the Middle East, but also from airlines in Europe and the US that decided to go the OEM route some years ago and are now taking a second look.”



It will take the continued education of operators and civil aviation authorities to see PMA parts truly become a global phenomenon, but the baby steps, and now surely the first major strides, are being taken. The “paradigm shift” Dark talks about is real; the great PMA debate and the competition between OEMs and PMA manufacturers is about to go global.

### Extending PMA reach

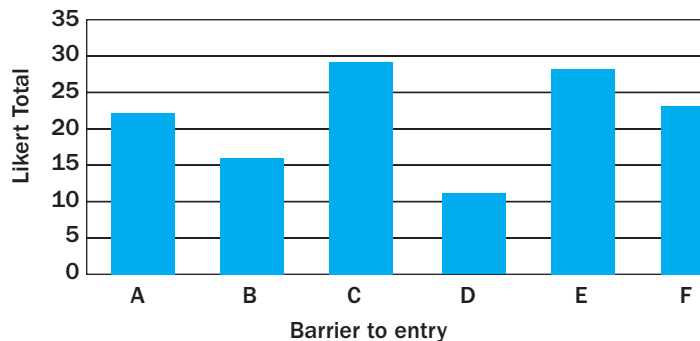
As well as reaching across new continents, PMA parts are also being manufactured across more places in the aircraft. Traditionally associated with the engine, it is now possible to find a PMA part available for almost every ATA chapter on the aircraft.

Schaefer asserts that this expansion has been guided by customer demand. “HEICO’s new part development is driven by its partner customers. We don’t develop parts and then

## Analysing the opinion of PMA stakeholders

University of Nottingham student Alex Hooley conducted a qualitative data analysis of the responses of a number of key PMA industry stakeholders as part of his BA (Hons) Management Studies dissertation. His aim was to establish what the main barriers to wider PMA acceptance are. Sending his research participants a questionnaire containing a Likert Scale (where respondents specify their level of agreement to a statement), he asked the candidates to quantitatively illustrate their opinions. Here are his results, and below, some of his analysis on the findings.

**Likert Result Column Chart**



**Key**

- A: Lack of Legislative Guidance**
- B: Technically-fuelled OEM Criticism**
- C: Commercially-fuelled OEM Criticism**
- D: Lack of Airline Implementation**
- E: Lessor Constraints**
- F: Lack of Evidence Supporting PMA Performance**

It is clear to see that the most widely viewed, deep impacting barrier to PMA parts acceptance (rather than the majority of respondents' beliefs) is OEM criticism fuelled by commercial concerns. Nearly all the participants of this study had the opinion that commercial issues outweighed the technical and safety concerns of OEMs. Although many acknowledged the latter, they feel that OEMs are protecting their pricing structures and turnover.

The barrier considered second most challenging to overcome was the constraints placed on airlines by leasing companies. The lack of evidence supporting PMA performance, and lack of legislative guidance, positioned third and fourth respectively, are two barriers that can be resolved, and in doing so, can weaken those barriers previously mentioned. It is for this reason that they rank so high amongst the responses of certain participants, namely those working within airlines and specific MROs.

try and sell them, everything we bring to market has a committed customer," she explains. "As we have added new partners those requests have become ever more varied, the parts we develop reflect the strategic direction of the individual partner airlines."

There has also been an emergent trend of more complex and larger parts being produced. The PMA industry has until now primarily focused on smaller, high volume parts, but as these opportunities become scarce, the focus is shifting to parts that may not have been on the radar of PMA manufacturers before. "Jet Parts Engineering recently developed a structural kit for CRJ aircraft that uses large sheet metal pieces to complete a modification," points out Dark.

While noting that the engine market has slowed somewhat because of "regulatory and OEM/leasing obstacles", Dalton observes that PMA manufacturers are now particularly branching out into developing interior parts "because of their non-flight critical and expensive nature". He says: "There is a new emphasis on [these] parts. Most airlines are willing to use PMA to save cost in these areas." Wencor itself is preparing to add PMA parts to its product offering.

For Chromalloy's McKirdy, whose company primarily develops and certifies parts for the gas path of the engine, "blades and vanes continue to be the most prolific area of focus for us at this time". The engine will always be the primary focus for PMA part development. "As a

technology developer, we see future opportunities in the development of PMA parts for the newer, more fuel efficient engines," he concludes.

It is not just different parts of the aircraft, but different aircraft types too, which are extending the reach of the PMA manufacturer. "The lion's share of our catalogue today focuses on large commercial aircraft," says Kvasnicka. "We see great opportunities in the regional marketplace — focusing both on regional jets and turboprops."

## The outlook

Coming out of the recession, competition has certainly intensified in the PMA parts sector — and not just from the OEMs. "Companies are doing more marketing, digging out costs, and becoming leaner and meaner in order to make money by taking market share from someone else — if the market is not growing you have to take share from someone else," explains Dalton.

Like Wencor, Chromalloy intends to grow its business by developing PMA parts for additional engines, certifying new repairs "that are a viable option to scrapping and the high priced OEM repairs", and continuing to "develop and patent new advanced coatings". HEICO too is "working very hard to expand and broaden [its] product offering". "Long-term success means responding to the needs of as many airlines as possible, whether that is through PMA or through an innovative range of DER (Designated Engineering Representative) repairs," concludes Schaefer.

Dark provides this encouraging outlook for the PMA sector: "Jet Parts Engineering has never had more optimism about the future than it has now. The world is opening to PMA and there is much opportunity."

Although the PMA debate will rumble on, the whole world has become a potential market for the PMA manufacturer, and the entire aircraft now provides opportunities for the development of PMA parts. Even with the increased competitiveness and success the OEMs are likely to achieve, it is a good time to be in the PMA business. The OEMs are not the big, bad wolf — they are doing what they need to do to succeed, and have every right to take a major slice of the aftermarket. And nor are the PMA manufacturers just unruly upstarts — they are providing healthy competition in a completely legitimate way.

The debate may not have changed all that much, but the 'battlefield' has got a lot bigger; and with the global market opening up, there is plenty of space for the strongest companies to operate — whichever side of the PMA fence they are on.