

INCREASED REPAIR COSTS IN THE AVIATION SECTOR

A number of developments are markedly increasing claims costs in the aviation insurance market. The adoption of new composite materials, the control of the spares market by manufacturers and the impact of long-term Power By the Hour (PBH) maintenance contracts have all contributed to making the ad-hoc post incident repair of some aircraft notably more expensive, particularly in the case of events that tend to be covered by insurance. In an area of the insurance market where 'attritional' claims often count as those under \$10m, these developments could be costing the aviation insurance market (much of which is underwritten in London) millions.

Composite materials

The use of composites in aircraft structures is not new - plywood is a composite product in a way and non-metallic structures have featured for many years - however their use has dramatically increased in the current new generation of aircraft. The highly publicised Boeing 787 and Airbus A350 are two where composites are extremely important and some smaller aircraft have complete composite structures.

There is no doubt that the quality of material now being procured is exceptionally high, with impact resistance being much greater than traditional wooden, fabric and metallic aircraft.



Photo Credit: Bazaar

Whilst this is an advantage and we are seeing less minor impacts causing a repair need on composite aircraft, compared to the relative soft belly of metallic skins, repair development and design is occurring on a bespoke basis for almost every incident, with little investment being released to design obvious repair needs prior to events occurring.

Traditionally, maintenance engineers have utilised an aircraft's Structural Repair Manual (SRM) in the review, assessment and application of many simple repair situations. This SRM application relied on the gained skills and knowledge to interpret information and an understanding of the material properties. Composite structures have completely changed this method of repair.

Moreover, due to the unknown and complex nature of these materials, and the closely guarded nature of their intellectual property, manufacturers are beginning to develop something of a monopoly over new material repairs. The departments responsible for ad hoc repair design have become very firm and important profit centres for manufacturers.

This is compounded by the fact that, increasingly, some areas of the spares market is being controlled by manufacturers meaning that maintenance budget holders (and subsequently insurers) have to pay manufacturers, rather than the open market, for spare parts. With manufacturers holding all of the knowledge when it comes to stress testing and repairing new composite parts there has also been less than desirable development of repair schemes by independent organisations.

Maintenance and repair contracts

The recent developments in aircraft and engines being rented in a similar way to cars are a modification on the previous historical lease ideas. Manufacturers are now offering customers the opportunity to receive an aircraft and the full maintenance package at the point of initial purchase. The benefits to the manufacturer and the finance division of any large organisations are self-evident. The pre-planning of this can help large sectors of the industry. Nevertheless, the contracts are negotiated in the absence of almost any input regarding what may be reasonable in the event of a loss and expected financial support from insurers. The principle being that the negotiated contract with guaranteed income will provide a reasonable rate agreed between the parties. The labour charges and engineering input costs in the event of an ad hoc incident are seen in the majority of cases to be well above any reasonable cost plus profit figure.

This type of pre-agreed cost for non-scheduled activity is not new to the industry and is understandable to a certain level, however is costly for insurers. Moreover, the experience of airlines in the past has enabled them to manage the ad hoc rates to be applied in both third party maintenance agreements and some manufacturer's contracts.

Power by the Hour (PBH)

High charges for event related repairs are not restricted to airframe needs. The engine manufacturers are all using the latest technology, which creates some superb efficiency gains and fascinating engineering developments but these also come at a cost. Engines can now last on wing much longer than earlier generations and on many occasions can be operated on a Power By the Hour (PBH) cost concept.



Photo Credit: World Vision

'Just in Time' material supply and significant production line requirements for some manufacturers have limited the resources of people and finances to develop repairs. The number of components considered to be one-life usage items has also increased. The result being that with some of these parts not having lives restricted by regulation, there is a difficult discussion to have when considering betterment in a regular engine claim. There are a number of engine types manufactured by large producers that have been in service for over a decade and still do not have full repair capability on all of their core components. Bird ingestion and foreign object damage within engines becomes expensive in the core. With the lack of independent organisations being able to develop repairs on complex materials, combined with the manufacturers' decision not to develop their own repair schemes in many cases, a replacement is used instead of a repair.