

Final destination: the scrapyard

Even the proudest aircraft reaches the end of the road at some point. The only option left to its owner is then to scrap it, but even this can be profitable.

The pictures which accompany this article will make any true aircraft fan sad. The idea that aircraft too should end up in the scrapyard for recycling, quickly and efficiently, is something to which we will increasingly have to accustom ourselves in the future, for even a clapped-out old plane still contains some valuable items. Given the numbers of new-build aircraft which are forecast for the next few decades, at some point their predecessors will have to be disposed of. But the scrap process is a lot more complex than with old cars, where usually a powerful press can transform the chassis and all the fittings into handy blocks of lead.

There are no presses for aircraft, and even if there were, this would be pure waste. Too many parts or entire subassemblies can be recycled. But before we go any further, it is appropriate to first consider why an aircraft is scrapped at all. Derk-Jan van Heerden, Managing Director of AELS (Aircraft End-of-Life Solutions) of Delft, Holland, explains. "First of all we scrap aircraft which are so old that the cost of maintaining and repairing them is too high for them to continue in operation and no one wants to buy them either. Secondly, we cannibalise aircraft to obtain spare parts, because for many types original components are a lot more expensive on the market. And finally there are aeroplanes – fortunately only a very few – which have sustained so much damage on take-off or landing that it is no longer economic to repair them and the only option is to break them up."

For each of these variants AELS offers a complete concept, thus making the customer's decision about the fate of the aircraft a lot easier. In every case, however, van Heerden sees himself as the agent of his customer. Either he expertly takes an old aircraft apart, removes all the parts capable of being recycled and sells these and the shredded residue, cleanly sorted, on the relevant markets, or else on the customer's behalf he looks for a used aircraft with as low a price tag as possible in which the parts he is seeking are still fully functional and compliant with the regulations. The customer gets these parts while the rest of the plane is sold, as before, at a profit. And finally there is the option of breaking up and scrapping the aircraft, but even here there is still money to be made. Given the current scrap prices on the world market, this is easy: one tonne of aluminium fetches about €750, stainless steel about €1,450 and copper from cables about €1,500.

What is then left over from the aircraft is shredded finely and sorted. Metals are separated, insulating materials are singled out and burned industrially and composite materials are recycled. There are even potential customers for these, people whose own components are made from CFRP scrap, which, to replace, would normally require long and expensive new fibres to be cut into small pieces. Given the enormous prices of CFRP on the global market, customers are therefore very interested in the scrap residue and pay good money for it.

Scrapping to order

The particular type of dismantling required also determines where the work is carried out. When a customer has an old aircraft scrapped, it normally removes everything that is capable of being recycled itself and leaves the empty shell to the recycling company. Now no longer capable of flying, the aircraft has to be scrapped there and then, which calls for mobility and flexibility from the company. But most airlines want the scrapping performed anonymously and choose for this neutral locations where there is as little public traffic around as possible. On the other hand, if one is purchasing a used aircraft to cannibalise, this can normally be flown to the designated place where the scrapping is to be carried out.

For competitive reasons, the established airlines all over the world like to have a young fleet. As soon as the first problems surface, the planes are sold on or returned to the leasing company. Old planes are no advertisement, hence the desire for anonymity. At some point the old aircraft end up in the Third World. Just for this reason, and also due to the climate and price of land, there are no aircraft cemeteries in Europe where, as in the USA, old aircraft can be parked in the open air either in the hope that a buyer will yet be found or until they can be sold piece by piece.

Aircraft are estimated to have a service life of about 30 years. This means that the first Airbus A300's are just starting to be withdrawn from the market. Over the next 25 years several thousand aircraft of all types will be retired, at an estimated rate of about 200 per year. These must be disposed of not only in accordance with certain quality criteria but also in a manner that complies with stringent environmental requirements. On top of this, the aircraft manufacturers have to contend with an EU recycling directive which, within a foreseeable period, will oblige them to take back and dispose of their products in the same way that manufacturers of vehicles and domestic appliances are now having to do. With the support of the European Commission, Airbus has already made provision for this and in 2005 initiated the €2.4 million Process for Advanced Management of End of Life Aircraft (PAMELA) project. As a result, a test centre was set up with the participation of several industrial partners at Tarbes airport in south-west France, an area known as "Aerospace Valley".

Clean and environmentally neutral disposal is the objective

The test centre, which has a workforce of about 100, is tasked with demonstrating that up to 95 percent of all the components in a commercial aircraft can be recycled, reused or recovered. Moreover, Boeing is working on a similar project.

The first project undertaken in Tarbes, over a period of 20 months, was to take apart an A300 which had been in service with a Turkish airline. The aim is that the experience gleaned from this scrapping exercise should flow into technologies for future projects, on which one would of course have to work a lot faster.

Meanwhile the manufacturers are killing two birds with one stone with such projects. They are not only preparing themselves for the possible take-back obligation, but disposal of the aircraft they once built but which are now fit only for the scrapyards presents them with the opportunity to generate a tidy sum they had not been expecting. When the cleanly separated extracted materials are sold, not only do the scrap prices mentioned above flow into the coffers, but good money can also be earned from recycling individual parts or entire subassemblies.

Many parts still work perfectly well even after 30 years and could be reinstalled in new aircraft without any problems. Others only need an overhaul before landing on the spare parts market. The fact that the manufacturers themselves are involved should ensure that customer trust is maintained, as the parts will be dismantled, overhauled and certified under stringent safety criteria. At the same time this action will ensure that the notorious "bogus parts", that is, cheap, falsified spare parts which are by their nature a danger to flight safety, are withdrawn from the black market.

Notwithstanding this, companies like the Dutch firm AELS will not lose out when the new system of scrapping aircraft comes into force. Smaller airlines especially which do not have huge capital resources up their sleeves will find it worth their while to call on the services of such companies. They will be able to have a special report prepared for every single aircraft in their fleet to help them manage the costs. Sometimes it will still be worthwhile to park an aircraft in the desert and wait for a new purchaser, whereas with other aircraft this would be a waste of money. The specialists will therefore advise the owners about the current market for a given aircraft type, the actual value of the intact aircraft and the value of all the extracted components, along with the costs of both conservation and scrapping. Every owner has to take leave of his aircraft at some point. It should at least be in good hands.

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