



# evs

[www.evsgroup.aero](http://www.evsgroup.aero)

## Aircraft Recovery Solutions



Environmental Dismantling &  
Material Recovery through  
Effective Recycling

Cost Effective  
Metal Recovery  
Engine Disassembly  
Component Solutions  
Total Scrap Avoidance  
100% Plastics Recycling

# EVS working in.....

## EFFECTIVE ENVIRONMENTAL DIS-ASSEMBLY.....

When an aircraft reaches end of life (EOL), the owner faces a decision of how best to dispose of the aircraft. Maximising the final return on the asset, while minimising environmental issues are chief concerns for any operator.

Current practice sees engines, major components and assemblies removed and either returned to the customer or offered to the market. Left over metal can of course be sold on to scrap merchants. The remaining plastics and composites cannot be recycled through current practices however, and comprises over 30% of the aircraft.

EVS have defined an alternative end of life solution that reduces this un-recyclable waste to below 10%. In addition to meeting best recovery practice for components and metals, this allows all plastics and composites to be recycled in a **carbon negative** process. Better still, the output is gas and char which can be converted into renewable energy!

### Recovery Potential

Best estimates in our industry are that up to 70% of an aircraft can currently be recycled at its end of life. The balance is largely comprised of composite structures (cowls, reversers, flight surfaces) and all the plastics (galleys, overhead bins, seat foam etc) leaving little alternative to having them crushed or sent to landfill. By embracing pyrolysis technologies, EVS are looking to increase this up to 90% recycling as a minimum.

#### Engines

After removal on-site, engines can either be shipped whole or disassembled depending on customer requirements. The capability to inspect and certify the parts, gives us the opportunity to induct material into our Material Recovery Solutions (MRS) process.

#### Components

All components not returned to the customer can be sold whole, or fed through the MRS process to return to the aftermarket as feedstock.

#### Metals

The intelligent recycling of engine and airframe piece parts through the MRS program ensures there is less metal heading to scrap than in a traditional operation. For that which is disposed of, EVS works with the re-processors and sorts material as best practice ensures we obtain the highest return.

#### Composites

All composite structures can either be returned or disassembled and the parts inducted into the MRS program. The remaining unserviceable material is then put through the pyrolysis recovery process.

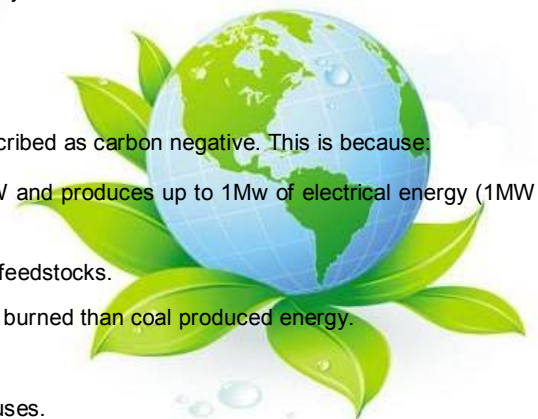
#### Plastics

100% of plastics can be put through the pyrolysis recovery process and ultimately turned into a combustible gas or carbon char. This **carbon negative** system turns all the waste material into marketable by-products with **zero emissions and no toxic waste streams as shown opposite**. All by-products from the process have uses either in Aerospace or general industry for generation or rejuvenation.

### Carbon Negative

Putting EOL material through our pyrolysis process is described as carbon negative. This is because:

- Processing 1 tonne of material uses up to 230 KW and produces up to 1Mw of electrical energy (1MW<sup>⊖</sup>e) per hour and 1.2 MW of thermal energy.
- All waste streams are environmentally acceptable feedstocks.
- The waste gas has 3 times less CO<sub>2</sub> per Kg when burned than coal produced energy.
- The pyrolysis process is ZERO emission.
- The carbon char residue has a myriad of "Green" uses.

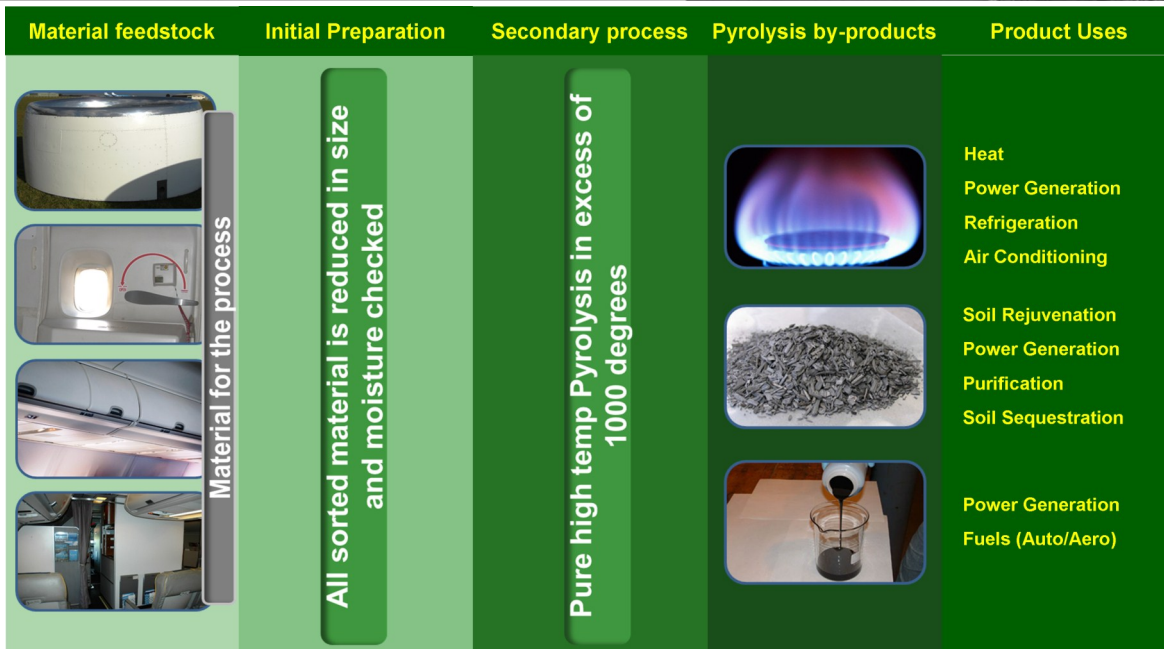
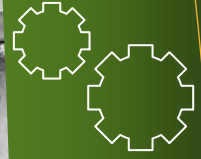


## ..... AND RECYCLING THROUGH PYROLYSIS.

Pyrolysis is the chemical decomposition of organic material. Unfortunately, the industry has been slow to develop a suitable system for use in Aerospace. Currently most units will work but produce large amounts of oil which needs re-processing first before being used for fuel.

EVS's partner has now overcome these difficulties and the main pyrolysis product is a high calorific fuel gas which can be used for power generation. Research would suggest that each tonne of waste (depending on composition) can produce up to 1.2MW of thermal energy.

The fuel gas produces substantial and sustainable energy from waste plastics and as such is carbon negative. As can be seen from the chart below, **all** pyrolysis by-products have continuing uses in industry.



## Material Recovery Solutions (MRS) and its role in Aircraft End Of Life (EOL)

EVS pioneered the MRS process in the USA over 2 years ago. Since then BER material which has been sent to the program has been disassembled and the serviceable parts inspected, certified and re-used in repairs throughout USA and Europe. Through a strict recovery policy only critical or non procurable parts are recovered.

Using our MRS process in aircraft EOL applications will help airlines and repair facilities reuse material which would normally need to be purchased from OEM's as new manufacture. On a large scale this is saving both significant investment in material but also using material environmentally by only destroying by recycling what physically cannot be re-used.

This process will allow the breakdown of EOL material and its marketing to repair facilities that want the individual parts and not the whole unit. Having ten fuel controls is not effective use of your assets anymore. Breaking five fuel controls for critical spares to support your current fleet is, however, a much better use of resource and investment. The methodology has been used on engines for many years, environmental considerations and best practice would suggest it's time to do the same thing with components.

**It is very difficult to fit all the information on here, so for more info...**

- Visit [www.evsgroup.aero/airframe-recovery.asp](http://www.evsgroup.aero/airframe-recovery.asp)
- Phone +44 7787 124541 or +44 750 1224677 for detailed information



As well as Aircraft Recovery Solutions, EVS offers a further range of products designed to reduce or control operating costs.

These are:

#### Engine Maintenance Management

The significant cost of engine overhaul means that there has to be a process to manage that cost. EVS provides a range of support services for this process from simple Invoice analysis through to contract negotiation and full engine monitoring through the repair cycle.

#### Component Management

EVS provides an integrated portfolio of cost reduction and cost avoidance opportunities for airlines and operators on components. EVS has an unrivalled package of services for parts and repairs - from sourcing, through purchasing, delivery, repair management and value analysis to full service sourcing of hard to find parts and components for VIP's.

#### Material Recovery Solutions

MRS provides owners an independent analysis of a component, and recovery of critical and valuable piece parts from the unit prior to scrap and disposal. Serviceable parts are then stored to be used on future units or sold on the market, adding real value to the operator for items they previously just threw away.

#### Warranty Management

Warranty represents an assurance that an item will last a certain amount of time and that if this promise or condition is not met the user will receive appropriate compensation. EVS have an online system, operational either as a stand alone or integrated with a client's existing information systems to flag any warranty opportunities proactively, and manage the resultant claims through to resolution .

#### Check Management

Along with Engine Maintenance Management, EVS have developed and applied Shouldcost analysis to the routine and non-routine processes of Check Management, in order to manage and reduce cost and add value for airlines and operators.



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