Features of Adhesive Bonding Technology

Detail Introduction :
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Bonding technology has unique advantages compared with riveting, welding, screwing, and other connection methods.

(1) Wide range of applications

It can connect a variety of materials with different elastic modulus and thicknesses, especially sheet materials, and has a shock absorption effect, which is incomparable with connection methods such as riveting, welding, and screwing.

(2) Long structural life

Because the bonding surface is large, the stress distribution at the joint is uniform, and the pressure bearing area is large, so the bonding parts will not have the problem of stress concentration like spot welding, screwing, and riveting. The bonded multilayer construction avoids the rapid propagation of cracks. If the helicopter rotor is changed to a bonding structure, the service life can be increased from 500 to 600h to 1500h, or even more than 6000h.

The repeated shear fatigue failure of general bonding is four × 106 times, while riveting is only 3 × 105 times, and the fatigue life is nearly ten times higher. When bonding thin plates, its shock resistance is 40% to 60% higher than that of riveting and screwing.

(3) Low manufacturing cost

Complex structural components can be completed by one-time bonding, while riveting and welding require multiple processes, and after welding, deformation will occur, which must be corrected and finished, adding unnecessary repetitive labor and reducing costs by 30% to 35%.

(4) Lightweight bonding parts

Since a lot of rivets and bolts are omitted, there is no welding seam, no wrinkling, smooth surface, and beautiful appearance. The use of bonding can reduce the weight of the aircraft by 20% to 25%.

(5) Good sealing performance

It can completely block the three leakages (air leakage, water leakage, oil leakage) and has good water resistance, medium resistance, corrosion resistance, and insulation performance, which cannot be achieved by riveting or screwing.

(6) The bonding process is simple

The equipment requirements are relatively simple, the operation is easy, it is conducive to automatic production, and the production efficiency is high.

(7) Variety of options available

For different materials, corresponding adhesives or even special adhesives can be selected, which can give various special properties to the adhesive joints, such as rapid curing characteristics, moisture resistance, insulation, electrical conductivity, magnetic permeability, etc.

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