

New Vehicle Designs and Materials

Can Your Collision Repair Shop Fix Them Right?

Today's vehicle designers face some competing demands. They need to reduce fuel consumption and polluting emissions, but still recognize that consumers love sport utility and other large vehicles. Consumers aren't clamoring for a return to the days of the compact car.

One solution is obvious, but challenging. Find a way to reduce the weight, and thus the fuel consumption, of vehicles without sacrificing size.

The aluminum industry believes it offers automakers a good alternative to the weight of steel. An aluminum-based car can be 22 percent larger than a steel car of the same weight. In recent years, the use of aluminum has surpassed the use of plastics in vehicles. Once limited to primarily engine, transmission and suspension parts, aluminum is increasingly being used for cosmetic outer panels, door skins and trunk lids, inner structural components, and even structural frame rails.

A limited but growing number of cars are constructed of nearly all aluminum. Aluminum industry officials recently used one such vehicle, an Audi A8, to show off aluminum's strength by supporting the 4,000-pound luxury sedan with only a six-pack of aluminum beverage cans under each wheel.

The steel industry is fighting back, however, with an ambitious multi-year project to develop an "ultralight steel auto body (ULSAB)." This consortium of steelmakers says it has shown that steel can be used to create a typical 5-passenger sedan with 25 to 33 percent less weight than a conventional steel-bodied vehicle, without raising production costs or sacrificing safety.

How is it done? First, the ULSAB uses more of what is known as high-strength steel. While between 20 percent and 60 percent of the body of most current vehicles is made from high-strength steels, these materials account for 100 percent of the ULSAB.

Traditional vehicle parts are stamped out of a sheet of one type and thickness of steel. The ULSAB engineers recognized that some of these parts could instead be stamped out of a "quilt-like" piece of steel created by welding different thicknesses or strengths of steel into a single flat piece. A part stamped from this "tailor-welded blank" can have high-strength steel in the areas

where it is needed, and thinner or lower strength steel in other areas. This removes weight that does not contribute to performance.

For example, the ULSAB body side, including the rear fender and roof structure, is all one part made from a tailor-welded blank that includes three grades of steel and five different thicknesses. By consolidating what have traditionally been multiple parts into one unit, designers also eliminate the weight of the flanges needed to weld the parts together.

Some of the non-structural portions of the ULSAB car body, such as the spare tire tub and dash panel insert, are made from a steel sandwich material. Two very thin skins of steel combined with a plastic core create this 1-millimeter thick material weighing 50 percent less than a comparable all steel piece.

As aluminum and elements of the ULSAB project are increasingly being used on vehicles on the road today, proper training is becoming even more important to have vehicles repaired properly after an accident. Vehicle owners should select a collision repair facility that has the current technical training to understand how to work with the lighter weight materials and changing vehicle design.

Many insurance companies and repair facility associations recommend you look for a business that has earned the I-CAR Gold Class Professionals® designation. The Gold Class designation indicates that a repair facility's employees have completed a substantial amount of training. They are up to date in collision repair knowledge and technology. I-CAR® training covers virtually every step of the repair process. This includes analyzing the damage, structural repair processes, corrosion protection, steel and aluminum welding, matching your vehicle's paint finish, and checking safety features such as airbag deployment, seatbelts and anti-lock braking systems. I-CAR established the Gold Class Professionals designation to help consumers identify repair facilities that have invested in proper training.

For the location of an I-CAR Gold Class Professionals business near you, call 1-800-ICAR-USA.