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RECENT ADVANCES IN JOINING TECHNOLOGY FOR CAR BODY APPLICATIONS

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Abstract

A review of the joining technology adopted for car body construction is briefly presented. Spot welding, laser welding, adhesive bonding, riveting, clinch joining and hybrid joining are considered. For each of the considered technologies the present status and the recent advances, mainly in design and testing, are discussed, with particular reference to fatigue and impact behavior. Advantages and limitations of each technique are briefly examined and the recent evolution to overcome the points of weakness is addressed. Particular attention is paid to the technical requirements raised with the adoption of lightweight materials (such as aluminium or plastic reinforced composite). To take the maximum advantage from the mechanical properties of one of the other joining technologies with respect to the traditional spot welding, the simple substitution is not, generally, the best solution and designers are asked to redesign the joint. In this perspective adhesive bonding appears to be the most suitable solution, while hybrid technology (i.e. the combined use of adhesive bonding with a limited number of mechanical fasteners) gives appropriate answer to some drawback of the only adhesive solutions.

Key words: car body, joining