

A Brief Overview on the Utilization of High Strength Steel (HSS) for Automotive Structural Welding Applications



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Abstract High-strength steels are now increasingly used in automotive structural applications owing to their resilience, crashworthiness, and ease of manufacturing. This paper reviews the application of high-strength steels for the automotive structure, describing the condition of the steel after been put in the car structures. Thereafter, the importance of advanced high strength boron steel is highlighted, and its weldability is discussed. Current issues related to welding and changes in microstructure are discussed. It is imperative that Boron steel is gaining widespread attention due to its good mechanical characteristic in car structures and its weldability remains a topic of significant research interest. Lastly, the important considerations are summarized.

Keywords High strength steel · Automotive structure · Boron steel

1 High Strength Steels

Automotive steels have become an important material for body construction of motor vehicles in North America since the 1900s [1]. HSS was developed in 1990s as it possessed higher strength values up to 500–600 MPa for the raw materials, whichever could achieve until 1500 MPa after heat treatment processes [2–5]. HSS have their potential advantages compared to conventional steels, especially in reducing the structural's weights, saving costs in term of transportations, materials, and handling.

In an article reported by Hyunho Yeom, it was important to apply this HSS due to the increasing demands for vehicles' parts and elements with longer service life rather than using conventional steels [6]. According to the steels usage developments, HSS was introduced to be a selective material with thicknesses lower than 2.0 mm

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