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APPLICATION OF HIGH STRENGTH STEELS TO RESPONSIBLE WELDED STRUCTURES ON MOTOR VEHICLES

ABSTRACT: There is constant tendency of engineers to decrease a weight of vehicles and to increase their capacity and mobility. Parallel with development of high strength steels, which starts in 90's years of last century, starts their application in industry for producing motor vehicles with special purpose (construction mechanization vehicles, fire and military vehicles, etc.). With increase of strength of used materials there are conditions for using lower thickness of cross sections what have direct influence to the weight reduction. With respect to that, one of the most used method for producing that kind of structures is welding, in this paper is analysed the weldability of used HS steel and it is proposed the optimal welding technology for welding HSS class S690QL. The assemblies and parts on one military vehicle are made of that steel. The optimal welding technology should preserve good mechanical properties in weld metal, transition zone and in HAZ as the most critical zone of the welded joint.

KEYWORDS: motor vehicles, high strength steel, S690QL, mechanical properties, weldability

INTRODUCTION

For considered vehicle several very responsible assemblies are made, and the aim of this paper is to propose welding technology which will ensure obtaining reliable welds. In paper is estimated the weldability of high strength steel on which number of factors have influence. Some of them are chemical composition of the base metal (BM), type of filler material (FM) and welding method, amount of diffusible hydrogen from weld metal into base metal, thickness, type and positions of welds, heat input, type of applied heat treatment, sequence of welding, etc. The optimal welding parameters are based on the results obtained from the mechanical tests performed at room as well

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