

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

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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.

KEY WORDS: motor vehicles, high strength steel, S690QL, mechanical properties, weldability

PRIMENA ČELIKA POVIŠENE ČVRSTOĆE KOD ZAVARENIH STRUKTURA MOTORNA VOZILA

REZIME: Postoji stalna težnja inženjera da se masa vozila smanji i da se povećaju kapaciteti i mobilnost. Paralelno sa razvojem čelika visoke čvrstoće, čija primena 90-tih je godina prošlog veka, počinje njegova primjena u industriji motornih vozila s posebne namene (građevinska mehanizacija vozila, vatrogasna vozila i vojnih vozila, itd). S povećanjem krutosti korišćenih materijala postavljaju se uslovi za primenu elemenata manjih poprečnih preseka što imaju direktan uticaj na smanjenje težine vozila. S obzirom na to, jedan od najčešće korišćenih metoda za proizvodnju takve konstrukcije je zavarivanje, u ovom radu je analizirana zavarljivost HS čelika i predlažu se optimalne tehnologije zavarivanja za zavarivanje HSS klase S690QL. Sklopovi i delovi na jednom vojnom vozilu su izrađeni od ove vrste čelika. Optimalna tehnologija zavarivanja treba da sačuva dobre mehaničke osobine šava metala, prelazne zone i u HAZ kao najkritičnije zone zavarenog spoja.

KLJUČNE REČI: motorna vozila, čelik visoke čvrstoće, S690QL, mehanička svojstva, zavarivanje

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