

Experimental research on ultrasonic joining of metallic materials used in the automotive industry

Cercetări experimentale asupra îmbinării cu ultrasunete a materialelor metalice folosite în industria de automobile

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Abstract

The purpose of this paper is to present a methodology for validation of the optimal technology for ultrasonic joining of nonferrous metal materials (Cu72.85) used primarily in the automotive industry.

Development of the ultrasonic assembly elements (booster and sonotrode), experimental tests of ultrasonic joining nonferrous metal materials and tensile strength testing of welded joints in accordance with ISO 14273: 2000 are also presented.

Validation of the optimal joining technology was based on a Quality factor (Q) which is given as the ratio of mechanical strength at rupture of the welded joint and the mechanical strength at rupture of the base material.

Keywords

Ultrasonic welding, tensile strength, copper alloys.