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Approaches on Aluminium Global Thermal Response in Butt Cold Welding Case

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ABSTRACT

The paper briefly presents several theoretical and experimental results on the Aluminium thermal response in butt cold welding case of two upset bars, 10 mm diameter, developed in Robotics and Welding Laboratories of Dunarea de Jos of Galati, Romania.

Due to a large plastic deformation process, obtained only by pressing the two bars at room temperature, the cold welding becomes possible, but in the original material significant structural changes expected. Material structure's refining during the upsetting produces also the material non-linear hardening.

Taking care on the above considerations, the initial assumptions about an important thermal response of 99% Aluminium during the upsetting process due to the inter-crystalline friction forces (we expected important temperature increasing especially in the contact area – around 200 C) were experimentally unconfirmed by the thermographic analysis of the cold welding process.

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