

## PROCEDURE OF WELDING BY COLD PRESSURE ON COGGED SURFACES

Bogdan Georgescu

Dunarea de Jos University of Galati, Robotics and Welding Department, Romania  
[bogdan.georgescu@ugal.ro](mailto:bogdan.georgescu@ugal.ro)

### ABSTRACT

*Cold welding on cogged surfaces is achieved by pressing an easy deformable metal (example aluminium) on a cogged surface of a harder component. The process requires accurate cleaning of contact area, where the cold welding is expected to occur. The joint was obtained only by plastic deformation of the Aluminium component on the harder one, made from Copper, Carbon or Stainless Steel, etc. The deformation of Aluminium is about 20-30 %. The welding on cogged surfaces of materials with different plasticity makes possible the production of bimetallic or multilayer elements. The weld tensile strength is up to 10% of aluminium ultimate tensile strength, better results being obtained for the shearing strength. A thermal treatment can be used to over double the joint resistance, by activating the materials diffusion on the contact surface. The weld contact electric resistance is negligible, recommending the process for producing dissimilar elements used in electrotechnics.*

**KEYWORDS:** cold welding, pressure welding, aluminum joints

### REFERENCES

- [1] **Georgescu B.** *Sudarea prin presiune la rece intre suprafete zimate (Pressure cold welding on cogged surfaces)*. Teza de Doctorat, Universitatea Dunarea de Jos din Galati, 2006.
- [2] **Scutelnicu Elena.** *Cercetari teoretice si experimentale privind procesele termice la sudarea imbinarilor eterogene (Teoretical and experimental researches on the thermal processes in dissimilar metals welding)*. Teza de Doctorat, Universitatea Dunarea de Jos din Galati, 2003.
- [3] **Iordachescu M.** *Contributii la sudarea prin presiune la rece cap la cap (Contributions to the butt cold welding)*. Teza de Doctorat, Universitatea Dunarea de Jos din Galati, 2005.
- [4] **Mircea O.** *Simularea ciclurilor termomecanice din imbinarile sudate prin topire (Thermomechanical cycles simulation in fusion welding)*. Teza de Doctorat, Universitatea Dunarea de Jos din Galati, 2005.
- [5] **Georgescu, B.,** *Sudarea prin presiune la rece pe suprafete zimate*, Editura EUROPLUS Galati, ISBN (10) 973-7845-49-8 si ISBN (13) 978-973-7845-49-8, 2007.
- [6] **Georgescu B.** *Procedeu de sudare prin presare la rece pe suprafete zimate (Procedure of welding by cold pressure on cogged surfaces)* – Brevet de inventie RO nr. 122266 / 30.03.2009.
- [7] **Georgescu B., Scutelnicu E.** *Applications of the welding on cogged surfaces*. International Conference on Materials Science & Engineering, BRAMAT 2009, 26 – 28 Feb 2009, Brasov, Romania, Book of Abstracts, Section 4: Advanced Welding Eco-Technologies.