

Several aspects concerning cold welding of cogged parts

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ABSTRACT

The paper describes the process that envisages joining of an aluminium part with a harder cogged copper part by using pressing cold welding. The principle consists in the deformation of the more plastic part – namely the aluminium one.

The maximum mechanical strength is obtained at the deformation rates superior to 20%, value obviously much lower than the one characterising the usual cold welding (minimum 70%). While the tensile strength of the joint is low (around 10% of the tensile strength of the parent metal), the shearing strength is much relevant. Through an appropriate thermal treatment, the value of the tensile strengths can be doubled, due to the diffusion processes.

The analysis of the contact electrical resistance shows very important conclusions for the practical applications of this method.

References

1. Georgescu V., Iordachescu M., Georgescu B. *Practica sudarii prin presiune la rece*. ISBN 973-31-1558-4 Editura Tehnica, Bucuresti, 2001.
2. Georgescu B., Iordachescu M., Georgescu V. *Characteristic of the cold welded joints on cogged surfaces*. IIW International Conference "Benefits of new methods and trends in welding to economy, productivity and quality". ISSN 0043-2288, Prague – Czech Republic, 14-15 July 2005, pag. 435-442.
3. Georgescu B., Constantin E., Georgescu V. *Gradul minim de deformare necesar sudarii la rece pe suprafete zimtate*. Revista Asociatiei de Sudura din Romania "SUDURA", ISSN 1453-0384, Nr 3 din 2005, pag. 23-26.
4. Georgescu B., Constantin E., Georgescu V. *Rezistenta electrica de contact a imbinarilor sudate la rece pe suprafete zimtate*. Lucrarile Conferintei Internationale a ASR "Sudarea în Romania în pragul aderarii la Uniunea Europeana", 28-30 sept 2005, Galati, ISBN 973-8359-33-3, pag. 166-174.
5. Georgescu B., Constantin E., Georgescu V. *Cresterea rezistentei imbinarilor sudate pe suprafete zimtate prin tratament termic*. Lucrarile Conferintei Internationale a ASR "Sudarea în Romania în pragul aderarii la Uniunea Europeana", 28-30 sept 2005, Galati, ISBN 973-8359-33-3, pag. 351-356.
6. Iordachescu M., Georgescu B., Georgescu V. *Procese neconventionale de sudare*. Format X5, 264 pagini, 292 figuri, 25 tabele. Editura Fundatiei Universitare "Dunarea de Jos" – Galati, ISBN 973-627-212-5, 2005.