

## ARC WELDING INVESTIGATION USING LASER SHADOWGRAPH METHOD

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### ABSTRACT

*Present article focuses on a methodology and equipments used in metal transfer process investigation, in MIG arc welding. The laser shadowgraph combined with a high-speed digital camera technique was applied to ascertain filler wire melting and metal droplets dynamics during MIG welding under different conditions. Experimental results obtained after images processing (droplets form and diameter, droplets dynamics and velocities) in different phases of the process can be used at the welding metal transfer modeling, modern power supply control algorithm development and new filler metal and gas testing.*

**KEYWORDS:** Laser, shadowgraphy, digital camera, MIG, welding, metal transfer.

### REFERENCES

- [1] Kleinfelder, S., Lim, S., Liu, X. & Gamal, E., *A 10000 frames/s CMOS Digital Pixel Sensor*, Fellow, IEEE Journal of Solid-State Circuits, vol. 36, No. 12, December 2001
- [2] Lim, S.H., *Video Processing Application of High Speed CMOS Image Sensors*, Dissertation Thesis, Stanford University, USA
- [3] Liu, X., *CMOS Image Sensors Dynamic Range and SNR Enhancement via Statistical Signal*, Dissertation Thesis, Stanford University, USA
- [4] Xinqiao Liu, *CMOS Image Sensors Dynamic Range and SNR Enhancement via Statistical Signal*, Dissertation Thesis, Stanford University, USA
- [5] Vilarinho, O., *Um Algoritmo Nao-Linear para Controle Sinergico de Equipamentos para soldagem MIG pulsada de aluminio*, Universidade Federal de Uberlandia, Congresso Brasileiro de Engenharia de Fabricacao, Brasil
- [6] Vilarinho, O. & Dantas, O., *Avaliacao da Tecnica Experimental de Espectroscopia Optica de Emissao para Medicao de Propriedades Fisicas do Arco de Soldagem*, Relatorio Interno LAPROSOLDA e LNMIS, Brasil.
- [7] \*\*\* *MV-D 1024-160 User Manual and Application Notes*.