

ARTÍCULO ACEPTADO

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Paper: Use of the plasma spectrum RMS signal for arc-welding diagnostics

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Abstracts:

A new spectroscopic parameter is used in this paper for on-line arc-welding quality monitoring. Plasma spectroscopy applied to welding diagnostics has typically relied on the estimation of the plasma electronic temperature, as there is a known correlation between this parameter and the quality of the seams. However, the practical use of this parameter gives rise to some uncertainties that could provoke ambiguous results. For an efficient on-line welding monitoring system, it is essential to prevent the appearance of false alarms, as well as to detect all the possible defects. In this regard, we propose the use of the root mean square signal of the welding plasma spectra, as this parameter will be proved to exhibit a good correlation with the quality of the resulting seams. Results corresponding to several arc-welding field tests performed on Inconel and titanium specimens will be discussed and compared to non-destructive evaluation techniques.