Spectrometer for detecting weld temperature

In this paper, studies regarding the ability of an optical setup based on photodiodes to detect a wide set of welding defects is presented.

First, we performed a study to evaluate the spectrometer as a sensor capable of detecting perturbations at the electrical arc. For this task, the experimental scheme seen in Figure 3 ...

The study introduces a non-intrusive system for detecting GTAW weld defects using spectrometer data. Change detection algorithms can effectively identify perturbations linked to weld defects in real-time.

Photodiodes and spectrometers are commonly used as laser welding monitoring sensors because they can monitor critical welding features, such as the gas and metal plasma behaviors, ...

It consists on monitoring the electronic temperature of chosen elements that are involved in the welding process. This property is taken from the arc weld region (plasma column) using an optic ...

Apparatus helps ensure high quality of weld by monitoring such contaminants as oxygen and hydrogen in shield gas, detecting inadequate flow of shield gas, and sensing changes in ...

For the automation of a laser beam welding (LBW) process, the weld quality must be monitored without destructive testing, and the quality must be assessed. A deep neural network ...

A spectrometer with a response range of 225-975 nm is designed and fabricated to measure and analyze the light reflected from the welding area in the LBW process.

This chapter will introduce how to use the automatic welding system to obtain arc spectral informa-tion based on commercial portable optical fiber spectrometer.

In this paper a welding monitoring sensor system in which the optical fiber capturing the light is embedded into the welding torch is presented. Several tests showing the feasibility of the proposed ...

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