

Topic: Analysis of Spectral Selective Photodiodes for Arc Welding



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Art der Arbeit:

Bachelorthesis	X	Experimental	X
Project	X	Design	
Internship	X	Theoretical	X
Masterthesis	X	Literature Re- search	

Deoartment:

Arc Welding/ Sensor Systems

Our profile:

For almost 60 years now the Welding and Joining Institute (ISF) of RWTH Aachen University has been doing research work about modern welding and joining technologies. The work of the ISF comprises almost all industrially relevant, non-detachable joining methods.

Description:

Intelligent manufacturing processes, an increasing degree of automation and quality standards demand efficient and robust sensor concepts, especially in high-wage countries. In particular, welding process evaluation and monitoring is becoming increasingly important for modern concepts of industrial networking. In this context, spectrally selective photodiodes offer the great advantage of detecting only defined arc plasma components and thus form the basis for very inexpensive and robust sensor concepts with a high transient information density.

In this work, the arc welding process will be characterized on the basis of measured photodiode signals.

With this knowledge, possible disruptions in everyday production can be revealed and described. The work content includes the investigation of different diode spectra and their transient signals. The aim of this work is the formulation of explicit relationships between photodiode signals and process stability, thus laying the foundation for a user-friendly sensor system consisting of a smartphone and photodiode sensor.

This work is part of a larger research project that may offer other interesting Topics for a thesis. This includes, for example, the development of an analysis app or the development of the photodiode sensor electronics. If you are interested, we will find a topic that suits your interests and abilities.

Your profile:

Student of mechanical engineering, electrical engineering, computer science or related studies. Knowledge of welding technology is not a prerequisite. The work can be supplemented by an experimental part and fit to your personal interest and skills. If you have any questions, don't hesitate to contact me!