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双栅极空气计数器系统参数优化设计方法

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New Design Method for Sensor System Parameter of Double Grid Air Counter

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摘要

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摘要 基于金属材料微裂纹检测传感器系统放电脉冲的形成过程,建立了离散化放电的数学模型,提出了传感器系统参数优化设计的一种新方法。实验结果表明,采用该理论设计的传感器系统参数,避免了经验公式设计的片面性,保证了传感器系统无损检测的可靠性和精确性。

关键词: 传感器系统 无损检测 低能电子 工作电压

Abstract: A discrete discharging model is built up, based on analyzing the discharging course of a double grid aircounter (DGAC). A new optimization method of DGAC parameter design is developed. The study shows that the working voltage is closely related to the geometric parameter of DGAC, the sensitivity of the circuit and the number of discharges. Experiment shows that the novel method can be used in parameter design of DGAC; not only can it effectively avoid one-sidedness by the traditional design, but also the hardware circuit design of control systems is very easy and trustworthy.

Keywords: sensor system non destructive testing low energy electron working voltage

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