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双电磁机构锤击系统的高频调控及试验

High frequency modulation and test of hammer system with double electromagnetic mechanism

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英文关键词: [welding](#) [frequency modulation](#) [metallographic microstructure](#) [double electromagnetic mechanism](#) [high frequency hammering](#) [high frequency](#)

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中文摘要:

针对现有随焊锤击装置电磁锤锤击频率低(1~3Hz),难以满足生产要求的现状,该文开发了双电磁机构锤击系统。以电磁理论为基础,设计了双电磁锤击装置;以AT89C52单片机为控制核心,设计了高频锤击控制电路、键盘输入及显示电路,并对程序进行调试、试验。试验表明:锤击装置可实现6~8Hz的高频锤击;与对照组相比,当锤击频率为3Hz时,魏氏组织晶粒视场面积为原来的23.9%,晶粒仍较大,组织性能改善不太明显;当频率为7Hz时,魏氏组织晶粒视场面积为原来的3.8%,组织明显得到细化,晶粒细小,组织的塑性韧性提高,改善了焊缝的力学性能。

英文摘要:

Because the frequency of the welding with the electromagnetic hammer device was low with only 1 to 3 Hz and it can not meet the production requirements, hammering system of double electromagnet mechanism was developed. Double electromagnetic hammer device was designed based on electromagnetic theory. Using MCU (micro controller unit) AT89C52 as controlling core, the circuit, the keyboard input and display circuit of high frequency control were designed, and the program was debugged. The experiment results showed that high frequency hammering of the hammer mechanism from 6 to 8 Hz was realized. Compared with the control group, when hammering frequency was 3 Hz, the visual area of widmanstatten structure was 23.9% of the control group, but crystal was still bigger and the improvement of organizational performance was not obvious; when the frequency was 7 Hz, the visual area of widmanstatten structure was 3.8% of the control group, it was obviously to be refined and had fine grain, and mechanical properties, plasticity and toughness obviously was improved.

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