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- (71) 申请人: 广东金湾高景太阳能科技有限公司 (GUANGDONG JINWAN GOKIN SOLAR TECHNOLOGY CO., LTD) [CN/CN]; 中国广东省珠海市金湾区三灶镇湖滨路1566号, Guangdong 519000 (CN)。四川高景太阳能科技有限公司 (SICHUAN GOKIN SOLAR TECHNOLOGY CO.,

LTD) [CN/CN]; 中国四川省宜宾市叙州区高场镇高社区金润产业园72栋1楼12号, Sichuan 644000 (CN)。

- (72) 发明人: 周禹 (ZHOU, Yu); 中国广东省珠海市金湾区三灶镇湖滨路1566号, Guangdong 519000 (CN)。付明全 (FU, Mingquan); 中国广东省珠海市金湾区三灶镇湖滨路1566号, Guangdong 519000 (CN)。郭翔 (GUO, Xiang); 中国广东省珠海市金湾区三灶镇湖滨路1566号, Guangdong 519000 (CN)。薄千顷 (BO, Qianqing); 中国广东省珠海市金湾区三灶镇湖滨路1566号, Guangdong 519000 (CN)。
- (74) 代理人: 广州三环专利商标代理有限公司 (SCIHEAD IP LAW FIRM); 中国广东省广州市越秀区先烈中路80号汇华商贸大厦1508室, Guangdong 510070 (CN)。

(54) Title: DIAMOND WIRE LASER WELDING METHOD AND SYSTEM

(54) 发明名称: 一种金刚线激光焊接方法及系统

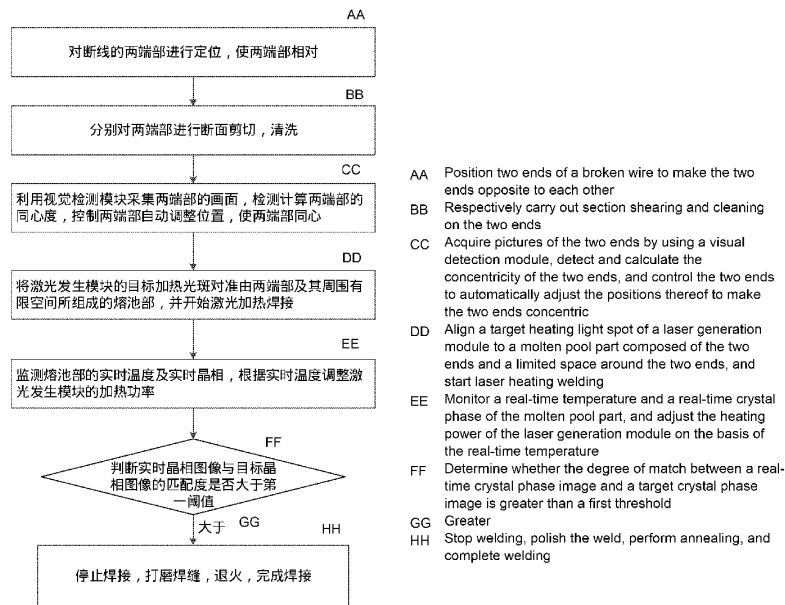


图 1

(57) Abstract: The present invention provides a diamond wire laser welding method and a system. The method comprises: positioning two ends of a broken wire to make the two ends opposite to each other; respectively carrying out section shearing and cleaning on the two ends; acquiring pictures of the two ends by using a visual detection module, detecting and calculating the concentricity of the two ends, and controlling the two ends to automatically adjust the positions thereof to make the two ends concentric; aligning a target heating light spot of a laser generation module to a molten pool part composed of the two ends and a limited space around the two ends,

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and starting laser heating welding; monitoring a real-time temperature and a real-time crystal phase of the molten pool part, adjusting the heating power of the laser generation module on the basis of the real-time temperature, determining whether the degree of match between a real-time crystal phase image and a target crystal phase image is greater than a first threshold, and if yes, stopping welding; and polishing the weld, performing annealing and completing welding. The welding method of the present invention has a high degree of automation, laser welding is carried out by using the laser generation module, heating is fast, efficiency is high, and accurate and automatic welding is achieved by determining a crystal phase image.

(57) 摘要: 本发明提供一种金刚线激光焊接方法及系统, 对断线的两端部进行定位, 使两端部相对; 分别对两端部进行断面剪切, 清洗; 利用视觉检测模块采集两端部的画面, 检测计算两端部的同心度, 控制两端部自动调整位置, 使两端部同心; 将激光发生模块的目标加热光斑对准由两端部及其周围有限空间所组成的熔池部, 并开始激光加热焊接; 监测熔池部的实时温度及实时晶相, 根据实时温度调整激光发生模块的加热功率, 判断实时晶相图像与目标晶相图像的匹配度是否大于第一阈值, 若大于, 停止焊接; 打磨焊缝, 退火, 完成焊接。本发明的焊接方法自动化程度高, 而且利用激光发生模块进行激光焊接, 加热快, 效率高, 通过对晶相图像的判断, 实现精准自动焊接。