ABSTRACT

A fast-frequency pulse TIG welding system, comprising a fast-frequency pulse TIG welding power source, the fast-frequency pulse TIG welding power source comprising a main circuit, a control circuit and a man-machine interaction system. The main circuit comprises a power frequency rectifying and filtering module, a pulse current main circuit, a background current main circuit and a high-frequency current switching circuit; the pulse current main circuit comprises a SiC full-bridge inverse current conversion module I, a high-frequency voltage transformation module I and a SiC rectifying and smoothing module I which are sequentially connected; the background current main circuit comprises a SiC full-bridge inverse current conversion module II, a high-frequency voltage transformation module II and a SiC rectifying and smoothing module II which are sequentially connected; the high-frequency current switching circuit comprises a high-frequency switching module and an anti-backfilling module which are sequentially connected; and the SiC full-bridge inverse current conversion module I comprises a SiC power transistor. The welding system has a high inversion frequency, good dynamic characteristics and stability, can reduce the switching loss of a power tube, and can stably output a regular fast-frequency pulse flexible current waveform of 20 kHz or more.

Figure to be published with the abstract: **Fig. 1**