GAS-LESS PROCESS AND SYSTEM FOR GIRTH WELDING IN HIGH STRENGTH APPLICATIONS

Abstract

A welding system and method is disclosed for girth welding high strength materials using a short arc welding process and a self-shielding electrode. The welding system contains a welding apparatus which advances the self-shielding electrode towards a workpiece to be welded and controls the arc length and the operation of the apparatus so that the weld satisfies the requirements for welding at least American Petroleum Institute Grade X-80 line pipe. The system additionally contains a power source with a controller for creating a current pulse introducing energy into the electrode to melt the end of the self-shielding electrode and a low current quiescent metal transfer section following the end of the melting pulse during which the melted electrode short circuits against the workpiece.

Figure 1