SYSTEM FOR CREATING CLAD MATERIALS USING RESISTANCE SEAM WELDING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This patent application claims the benefit of U.S. Provisional Patent Application

Serial No. 61/664,423 filed on June 26, 2012 and entitled "Resistance Seam Welding for Use in Cladding of Pipe"; and U.S. Provisional Patent Application Serial No. 61/788,405 filed on March 15, 2013 and entitled "Resistance Seam Welding for Use in Cladding of Pipe"; the disclosures of which are incorporated by reference herein in their entirety and made part of the present U.S. utility patent application for all purposes. This application is also a continuation-in- part of U.S. Patent Application No. 12/412,685 filed on March 27, 2009 and entitled "Method of Creating a Clad Structure Utilizing a Moving Resistance Energy Source", the disclosure of which is hereby incorporated by reference herein in its entirety and made part of the present U.S. utility patent application for all purposes.

BACKGROUND OF THE INVENTION

[0002] There are numerous situations in industry (e.g., oil and gas) where corrosive or erosive media may be a concern, such as, for example, acidic, caustic, abrasive, and oxidizing environments. Clad materials offer opportunities to maximize the characteristics of individual materials for utility in such environments. Current fabrication approaches for creating clad materials in heavy industries include technologies ranging from arc deposition to explosion bonding. These technologies offer various mechanisms for material deposition, but all include high implicit costs.

[0003] Clad pipe typically uses a steel outer case and a nickel base liner, which are on the order of 3 mm thick. Current fabrication methods or processes include roll bonding and mechanical cladding. The former is a complex method of diffusion bonding the cladding material to steel plates at a mill, rolling the product to service thicknesses, then fabricating pipe using the UOE (U-forming, O-forming and final expansion) process. This method creates a high