

Electroslag Welding (ESW) - A New Option for Welding Aluminum Bus Bars in Smelters

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Abstract

In recent years, a new welding process for aluminum bus bars, Electroslag Welding (ESW), has been developed, tested and used industrially, permitting significant productivity gains both in time and manpower. ESW offers among other advantages the possibility to modify or repair bus bars of an operating smelter with minimum power shutdown time (about 20 minutes per full bus bar cross-section weld) and to build a new rectifier room reducing the construction time and the costs by more than 50 %. The present paper will describe this new welding process and its optimization, discuss the weld quality and present a few industrial applications, such as factory construction of the bus bar network of a new smelter by assembly of sub-modules and the alteration of the bus bar network of a smelter in operation in order to add a new rectifier to the network for additional production capacity.

Keywords: Electroslag welding (ESW); aluminum bus bar welding; busbar sub-assembly; aluminum smelter capacity creep.