

Activated Flux TIG Welding Process with Filler Wire (IIW Doc. 212-1454-16)

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ABSTRACT

An activated flux TIG welding process was developed in 1960s for welding of Titanium by researcher of the Paton Institute of Electric Welding in Ukraine. This process overcomes the major limitation of the conventional TIG welding process, such as its relative shallow penetration particularly in single pass welding operation, high sensibility of the weld bead shape to variation of chemical composition of the base metal and low productivity.

Application of ATIG welding process reported for various ferrous and non ferrous materials including P9, P91, Stainless Steel, Al alloys etc. Many researchers have tried single component fluxes while few tried commercially available fluxes. In fact application of activated flux was reported for various arc welding

processes Includes PAW, GMAW addition to TIG welding. Limited research report in which flux was applied for LBW and EBW processes also. Recently author reported application A-TIG welding process for joining dissimilar metals, carbon steel to stainless steel.

One of the typical problems faced by A-TIG welding is under fill, which is not acceptable for many critical applications like pressure vessels, cryogenic tanks etc, was solved with application of A-TIG process with filler wire addition. Mechanical properties results are better than normal TIG and A-TIG without filler metal processes.

Key words: A-TIG welding, Stainless Steel, Activated flux, under fill, cryogenic tanks.