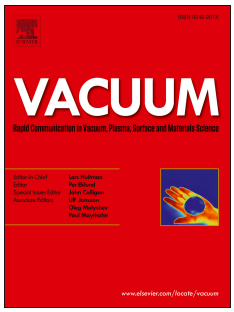
Accepted Manuscript



Electron beam welding – Techniques and trends – Review

M.St. Węglowski, S. Błacha, A. Phillips

PII: S0042-207X(16)30124-5

DOI: 10.1016/j.vacuum.2016.05.004

Reference: VAC 7012

To appear in: *Vacuum*

Received Date: 27 January 2016

Revised Date: 1 May 2016

Accepted Date: 2 May 2016

Please cite this article as: Węglowski MS, Błacha S, Phillips A, Electron beam welding – Techniques and trends – Review, *Vaccum* (2016), doi: 10.1016/j.vacuum.2016.05.004.

ELECTRON BEAM WELDING – TECHNIQUES AND TRENDS - REVIEW

***Węglowski M.St.*[1], *Błacha S.*[1], *Phillips A.*[2]**

[1]*Institute of Welding, Bl. Czesława Str. 16-18, 44-100 Gliwice, Poland*

[2]*Cambridge Vacuum Engineering, Denny Industrial Centre Pembroke Avenue Waterbeach, CB25 9QX Cambridge, UK*

Corresponding author: marek.weglowski@is.gliwice.pl

The paper was presented at the 9th Symposium on Vacuum based Science and Technology, held on November 17-19, 2015 in Kolobrzeg Poland.

Abstract

Electron beam welding, despite a long history and widespread arc and laser technology, is still widely used in industry. The main applications for this high efficiency welding process are: automotive, electronics, electrical engineering, aerospace and mechanical engineering industry. The technology ensures high-quality welded joints in structural metals in a wide range of thickness from 0.025 mm to 300 mm. It is also used for the production of films and coatings by deposition and surface modification. In the paper approximated examples of the use of the electron beam are given by the welding, rapid prototyping, texturing surface, cladding with wire and powder as well as alloying. It also provides information about the possible techniques that can be used during these processes and the trends in electron beam welding.

Keywords: electron beam welding, cladding, surface modification, rapid prototyping, machines