

Electron Beam Welding

Examples of 30 Years Job-Shop
Experience

Dietrich v. Dobeneck



pro•beam

Electron Beam Welding

Examples of 30 Years Job-Shop
Experience

Dietrich v. Dobeneck



Dietrich v. Dobeneck:
Electron Beam Welding
Examples of 30 Years Job-Shop Experience

© 2005 All rights are reserved with pro-beam AG & Co. KGaA
Published by the author
Printed in Germany

Contents:

Introduction	4
Electron Beam Welding according to Material Aspects.....	7
Electron beam welding of steel.....	7
Unalloyed and structural steel.....	7
Low and high alloyed steel.....	9
Stainless steel	11
Cast iron.....	14
Soft iron and silicon iron	14
Electron beam welding of aluminium, magnesium and their alloys	15
Aluminium	15
Magnesium	19
Electron beam welding of copper and copper alloys.....	21
Electron beam welding of nickel- and cobalt alloys	25
Reactive and refractory materials	26
Dissimilar materials	30
Compound materials.....	34
Electron beam brazing	35
Electron Beam Welding according to Design Aspects	37
Minimal heat input	37
Reduced distortion	40
Saving of machining	43
Material selection according to function	48
Access for beam and tools	51
Thick – thin connections	55
Small parts.....	57
Large parts	59
Repair Welding with an Electron Beam	62
Electron beam Welding of large Series as Subcontractor.....	66
Electron beam welding of turbine engine vane ring	67
Camshafts manufactured by hydro forming	68
Conclusions	70