

Title (en)  
METHOD FOR CLEANING METALLIC SURFACES

Title (de)  
VERFAHREN ZUR REINIGUNG VON METALLOBERFLÄCHEN

Title (fr)  
PROCEDE DE NETTOYAGE DE SURFACES METALLIQUES

Publication  
**EP 1114196 B1 20020502 (DE)**

Application  
**EP 99942869 A 19990813**

Priority  
• DE 19840778 A 19980907  
• EP 9905960 W 19990813

Abstract (en)  
[origin: WO0014289A1] When metallic parts are annealed in an inert low-hydrogen atmosphere, carbon deposits often remain on the surface of said parts. The inventive method and device allow for controlled dampening of the dry inert low-hydrogen atmosphere and transformation of carbon deposits into volatile carbon oxides. Said method and device provide a soot-free annealing process and substantially prevent any mass transfer with the material.

IPC 1-7  
**C21D 9/67**; **C21D 1/76**

IPC 8 full level  
**C21D 1/76** (2006.01); **C21D 9/67** (2006.01); **C23G 5/00** (2006.01)

CPC (source: EP)  
**C21D 1/76** (2013.01); **C23G 5/00** (2013.01)

Citation (examination)  
• US 5569339 A 19961029 - SCHEUERMANN WALTER [DE]  
• DE 4241746 C1 19940825 - MESSER GRIESHEIM GMBH [DE]  
• Claud Béguin, "Einführung in die Technik der Schutz- und Reaktionsgase, (1995), 154 - 159  
• F. Neumann, "Methoden zum Messen und Regeln von Aufkohlungs- atmosphären unter besonderer Berücksichtigung des Sauerstoffpotentials", in HTM 44, (1989), 5, pages 261 - 269  
• T. H. Sanderson, "Steam Atmosphere Heat Treatment, in Heat Treatment of Metals", 1975.4, p. 109 - 112  
• R. R. Judd et al., "Effect and Importance of Controlled and Annealing Atmosphere on Magnetic Properties of Lamination Steels", in Heat Treatment of Metals, 1995.4, p. 83 - 88  
• EN 746-3

Designated contracting state (EPC)  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)  
**WO 0014289 A1 20000316**; AT E217029 T1 20020515; DE 19840778 A1 20000309; DE 59901364 D1 20020606; EP 1114196 A1 20010711; EP 1114196 B1 20020502; EP 1114196 B2 20060412; PL 193048 B1 20070131; PL 346466 A1 20020211; YU 39999 A 20011226; YU 49428 B 20060116

DOCDB simple family (application)  
**EP 9905960 W 19990813**; AT 99942869 T 19990813; DE 19840778 A 19980907; DE 59901364 T 19990813; EP 99942869 A 19990813; PL 34646699 A 19990813; YU 39999 A 19990820