Title (en)

Process for ultrasonic shotpeening large annular surfaces of thinwalled workpieces

Title (de)

Verfahren zum Ultraschall-Kugelstahlen von grossformatigen ringförmigen Oberflächen von dünnwandigen Werkstücken

Title (fr)

Procédé de grenaillage par ultrasons de surfaces annulaires de grandes dimensions sur des pièces minces

Publication

EP 1101827 A1 20010523 (FR)

Application

EP 00403183 A 20001116

Priority

FR 9914481 A 19991118

Abstract (en)

The invention concerns a method for ultrasonic shot blasting of large-dimensioned annular surfaces (5) on thin workpieces (1). Said method is characterised in that the surface to be shot blasted (5) performs at least N = five revolutions in front of the shot blaster opening (10) during the shot blasting process, so as to reduce the deformations of the workpiece (1).

Abstract (fr)

L'invention propose un procédé de grenaillage dit "par ultrasons" pour grenailler des surfaces (5) annulaires de grandes dimensions sur des pièces (1) minces. Un tel procédé est remarquable en ce que la surface à grenailler (5) effectue au moins N = cinq révolutions devant l'ouverture (13) de l'enceinte de grenaillage (10) pendant le grenaillage, afin de réduire les déformations de la pièce (1). <IMAGE>

IPC 1-7 (main, further and additional classification)

C21D 7/06

IPC 8 full level (invention and additional information)

B24C 1/10 (2006.01); **C21D 7/06** (2006.01); C21D 1/04 (2006.01)

CPC (invention and additional information)

B24C 5/005 (2013.01); **B24C 1/10** (2013.01); **C21D 7/06** (2013.01); C21D 1/04 (2013.01); Y10T 29/479 (2013.01)

Citation (search report)

- [DY] FR 2689431 A1 19931008 - TEKNOSON [FR]
- [Y] EP 0492323 A2 19920701 - MTU MUENCHEN GMBH [DE]
- [A] US 5509286 A 19960423 - COULON ANDRE [FR]

- [A] DATABASE WPI Week 8919, Derwent World Patents Index; AN 89-143538, XP002145301
- [A] DATABASE WPI Week 200027, Derwent World Patents Index; AN 2000-315575, XP002145302

Cited by

FR2816538A1; EP1207013A1; US6536109B2

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DE ES FR GB IT SE

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EP 1101827 A1 20010523; EP 1101827 B1 20050126; CA 2325897 A1 20010518; CA 2325897 C 20070918; DE 60017681 D1 20050303; DE 60017681 T2 20051222; ES 2233310 T3 20050616; FR 2801322 A1 20010525; FR 2801322 B1 20020208; JP 2001170866 A 20010626; JP 4267199 B2 20090527; RU 2210602 C2 20030820; UA 66403 C2 20011015; US 6289705 B1 20010918; WO 0136692 A1 20010525

INPADOC legal status

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- Effective date : 20131117

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- Effective date : 20150327

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- Ref Country Code : ES
- Payment date : 20121114
- Year of fee payment : 13

2009-01-23 [REG FR CD] CHANGE OF NAME OR COMPANY NAME

2006-01-18 [26N] NO OPPOSITION FILED
- Effective date : 20051027

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- Owner name : SNECMA

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- Document : ES 2233310 T3

2005-04-06 [GBT] GB: TRANSLATION OF EP PATENT FILED (GB SECTION 77(6)(A)/1977)
- Effective date : 20050310

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