Title (en)

Method and apparatus for calculating the roll gap contour

Title (de)

Verfahren und Vorrichtung zur Berechnung der Walzspaltkontur

Title (fr)

Procédé et dispositif pour calculer le profil de l'emprise entre les cylindres

Publication

EP 1240955 A1 20020918 (DE)

Application

EP 02001665 A 20020124

Priority

AT 4002001 A 20010314

Abstract (en)

To compute the roller gap contour between at least two rollers (A), at a rolling stand of the rolling mill, the roller gap contour is given on-line from the results of a combination derived from a prior computation and an on-line computation. The prior computation includes a distortion vector field e.g. the radial distortion field of a roller under a given loading. The result is shown as a Fourier series, and the prior work uses a finite element computation

Abstract (de)

Die erzielte Genauigkeit des Walzprofils eines Walzproduktes ist ein wesentliches Qualitätsmerkmal einer Walzstraße. Die genaue Kenntnis der Walzspaltkontur in Walzstraßen ist dabei Voraussetzung zur Erzielung hoher Genauigkeiten durch eine entsprechende Regelung der Walzstraße. Bis jetzt waren genaue Berechnungen der Walzspaltkontur jedoch sehr zeitaufwendig, wodurch keine Echtzeit-Anwendung möglich war. Umgekehrt waren schnelle Berechnungen sehr ungenau, wodurch diese nur bedingt zur Regelung eingesetzt werden konnten. Die vorliegende Erfindung betrifft ein Verfahren zur Berechnung der Walzspaltkontur, das sehr genaue Ergebnisse liefert und trotzdem in Echtzeit durchgeführt werden kann. <IMAGE>

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

B21B 37/42

IPC 8 full level (invention and additional information)

B21B 37/42 (2006.01); B21B 13/02 (2006.01); B21B 37/28 (2006.01); B21B 38/10 (2006.01)

CPC (invention and additional information)

B21B 37/42 (2013.01); B21B 37/28 (2013.01); B21B 38/105 (2013.01); B21B 2013/025 (2013.01); B21B 2261/04 (2013.01); B21B 2265/12 (2013.01); B21B 2267/24 (2013.01)

Citation (search report)

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- [X] DE 3637043 A1 19880505 - LICENTIA GMBH [DE]
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Cited by

EP1600221A1; DE102009043401A1

Designated contracting state (EPC)

DE ES FR GB IT

EPO simple patent family

EP 1240955 A1 20020918; EP 1240955 B1 20040714; AT 410904 B 20030825; AT A4002001 A 20030115; DE 50200608 D1 20040819

INPADOC legal status

2018-05-31 [PGFP FR] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
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- Payment date : 20180119
- Year of fee payment : 17

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- Ref Country Code : IT
- Payment date : 20180129
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2018-04-30 [PGFP DE] POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE
- Ref Country Code : DE
- Payment date : 20180122
- Year of fee payment : 17

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- Payment date : 20180119
- Year of fee payment : 17

2018-01-19 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 17

2017-05-03 [REG GB 732E] AMENDMENTS TO THE REGISTER IN RESPECT OF CHANGES OF NAME OR CHANGES AFFECTING RIGHTS (SECT. 32/1977)

- Free text : REGISTERED BETWEEN 20170406 AND 20170412

2017-02-03 [REG FR CD] CHANGE OF NAME OR COMPANY NAME
- Owner name : PRIMETALS TECHNOLOGIES AUSTRIA GMBH, AT
- Effective date : 20170103

2017-02-03 [REG FR TP] TRANSMISSION OF PROPERTY
- Owner name : PRIMETALS TECHNOLOGIES AUSTRIA GMBH, AT
- Effective date : 20170103

2017-01-20 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 16

2016-10-27 [REG DE R081] CHANGE OF APPLICANT/PATENTEE
- Owner name : PRIMETALS TECHNOLOGIES AUSTRIA GMBH, AT
- Free text : FORMER OWNER: VOEST-ALPINE INDUSTRIEANLAGENBAU GMBH & CO., LINZ, AT
- Document : DE 50200608

2016-10-27 [REG DE R082] CHANGE OF REPRESENTATIVE
- Document : DE 50200608
- Representative's name : KINNSTAETTER, KLAUS, DIPL.-PHYS.UNIV., DE

2016-01-21 [REG FR PLFP] FEE PAYMENT
- Year of fee payment : 15

2010-01-06 [27O] OPPOSITION REJECTED
- Effective date : 20091023

2008-11-05 [RAP2] TRANSFER OF RIGHTS OF AN EP GRANTED PATENT
- Owner name : SIEMENS VAI METALS TECHNOLOGIES GMBH & CO

2005-07-06 [R26] OPPOSITION FILED (CORRECTION)
- Opponent name : SMS DEMAG AG
- Effective date : 20050330

2005-06-01 [R26] OPPOSITION FILED (CORRECTION)
- Opponent name : SMS DEMAG AG
- Effective date : 20050330

2005-05-25 [26] OPPOSITION FILED
- Opponent name : SMS DEMAG AG
- Effective date : 20050330

2005-04-08 [ET] FR: TRANSLATION FILED

2005-03-23 [REG IE FD4D] EUROPEAN PATENTS DESIGNATING IRELAND TREATED AS ALWAYS HAVING BEEN VOID

2004-11-03 [GBT] GB: TRANSLATION OF EP PATENT FILED (GB SECTION 77(6)(A)/1977)
- Effective date : 20041013

2004-10-25 [PG25 ES] LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO
- Ref Country Code : ES
- Free text : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT
- Effective date : 20041025

2004-08-25 [REG IE FG4D] EUROPEAN PATENTS GRANTED DESIGNATING IRELAND
- Free text : GERMAN

2004-08-19 [REF] CORRESPONDS TO:
- Document : DE 50200608 P 20040819

2004-07-14 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : B1
- Designated State(s) : DE ES FR GB IT

2004-07-14 [REG GB FG4D] EUROPEAN PATENT GRANTED
- Free text : NOT ENGLISH

2003-07-09 [17Q] FIRST EXAMINATION REPORT
- Effective date : 20030523

2003-07-02 [RBV] DESIGNATED CONTRACTING STATES (CORRECTION)
- Designated State(s) : DE ES FR GB IT

2003-06-04 [AKX] PAYMENT OF DESIGNATION FEES
- Designated State(s) : DE ES FR IT

2003-01-15 [17P] REQUEST FOR EXAMINATION FILED
- Effective date : 20021115

2002-09-18 [AK] DESIGNATED CONTRACTING STATES:
- Kind Code of Ref Document : A1
- Designated State(s) : AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

2002-09-18 [AX] REQUEST FOR EXTENSION OF THE EUROPEAN PATENT TO:
- Free text : AL;LT;LV;MK;RO;SI