Title (en)

BLAST FURNACE OPERATION METHOD

Title (de)

BETRIEBSVERFAHREN FÜR EINEN VERBRENNUNGSOFEN

Title (fr)

PROCÉDÉ D'EXPLOITATION DE HAUT FOURNEAU

Publication

EP 2796566 B1 20180829 (EN)

Application

EP 12860851 A 20120301

Priority

- JP 2011279954 A 20111221
- JP 2012055893 W 20120301

Abstract (en)

[origin: EP2796566A1] A lance 4 for injecting a fuel through a tuyere 3 is a double tube. Pulverized coal is injected through an inner tube 21 of the double wall lance 4. Oxygen is injected through an outer tube 22 of the double wall lance 4. Notches 23 are formed in a injecting front end of the inner tube 21 of the double wall lance 4. The concentration of oxygen in a gas composed of a carrier gas for the pulverized coal and a gas injected through the outer tube is 35% by volume or more. Even in an operation using pulverized coal having a volatile matter content of 25 mass% or less at a high pulverized coal ratio of 150 kg/t or more, the combustion temperature can be increased, and consequently CO 2 emissions can be reduced. The specific oxygen consumption can be suppressed by decreasing the oxygen concentration to less than 70% by volume. The notches 23 may be circumferentially evenly spaced in the inner tube 21 of the double wall lance 4 and further improve combustion efficiency.

IPC 8 full level

C21B 5/00 (2006.01); **C21B 7/00** (2006.01); **C21B 7/16** (2006.01)

CPC (source: EP)

C21B 5/003 (2013.01); **C21B 7/163** (2013.01); **F27D 3/16** (2013.01); F27D 2003/169 (2013.01)

Citation (examination)

WO 2008006764 A1 20080117 - WURTH PAUL SA [LU], et al

Citation (opposition)

Opponent : PAUL WURTH S.A.

- JP 2000192119 A 20000711 - KOBE STEEL LTD
- CN 102268496 A 20111207
- WO 2008006764 A1 20080117 - WURTH PAUL SA [LU], et al
- EP 0576869 A2 19940105 - WURTH PAUL SA [LU]
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- NOZDRACHEV ET AL.: "Development of the Technology of Injecting Pulverized-Coal Fuel into the Blast Furnace (Analysis of World Practice for the Period 1993-1997", METALLURGIST, vol. 42, no. 8, 1998, pages 302 - 309, XP055610304

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Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

EP 2796566 A1 20141029; **EP 2796566 A4 20151202**; **EP 2796566 B1 20180829**; AU 2012355194 A1 20140724; AU 2012355194 B2 20150903; BR 112014015336 A2 20170613; BR 112014015336 A8 20170613; BR 112014015336 B1 20190514; CN 104024440 A 20140903; CN 104024440 B 20160120; EP 3421618 A1 20190102; EP 3421618 B1 20230913; EP 4283233 A1 20231129; IN 1261KON2014 A 20151016; KR 101629123 B1 20160609; KR 20140109964 A 20140916; TW 201326405 A 20130701; TW I487791 B 20150611; WO 2013094230 A1 20130627

DOCDB simple family (application)

EP 12860851 A 20120301; AU 2012355194 A 20120301; BR 112014015336 A 20120301; CN 201280063993 A 20120301; EP 18181898 A 20120301; EP 23184934 A 20120301; IN 1261KON2014 A 20140611; JP 2012055893 W 20120301; KR 20147019598 A 20120301; TW 101106750 A 20120301