

Title (en)

Method and apparatus for producing metal from metal ores

Title (de)

Verfahren und Vorrichtung zur Erzeugung von Metall aus Metallerzen

Title (fr)

Procédé et installation pour la production de métal à partir de minerais métalliques

Publication

EP 1013778 B1 20010509 (DE)

Application

EP 99102445 A 19990209

Priority

DE 19859354 A 19981222

Abstract (en)

[origin: EP1013778A1] Metal production from oxidic ore, comprising tuyere injection of plastic supplied by a compressed air transport line (10) equipped with shut-off valves (24, 28, 29) for avoiding blockages and hot blast back-flow, is new. Metal production from oxidic ore comprises supplying fluidized plastic particles to tuyere injection lances (18) of a shaft furnace (1) by a transport line (10) equipped with shut-off valves (24, 28, 29), a compressed air entry connection (31) being provided in the transport line (10) or in each lance. The first shut-off valve (24) is closed when plastic blockage of the transport line or lances occurs; the second shut-off valve (28) is closed when hot air flows back through the injection lances (18); and the third shut-off valve (29) is closed when compressed air passes over and cools the injection lances. Independent claims are also included for the following: (1) a plant for carrying out the above process; and (2) a blast furnace in which the above process is carried out.

IPC 1-7

C21B 5/02

IPC 8 full level

C22B 5/10 (2006.01); **C21B 5/00** (2006.01); **C21B 5/02** (2006.01); **C21B 13/02** (2006.01); **C22B 5/12** (2006.01)

CPC (source: EP KR US)

C21B 5/00 (2013.01 - KR); **C21B 5/023** (2013.01 - EP US)

Cited by

DE102008026835A1; ITUB20153608A1; AT409635B; AT512017A1; AT512017B1; US11213830B2; US9428818B2; WO2008014579A1; WO2017046708A1

Designated contracting state (EPC)

AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

EP 1013778 A1 20000628; **EP 1013778 B1 20010509**; AT E201050 T1 20010515; BR 9901289 A 20000905; CA 2261501 A1 20000622; CA 2261501 C 20031118; CN 1139663 C 20040225; CN 1261106 A 20000726; DE 19859354 A1 20000706; DE 59900087 D1 20010613; DK 1013778 T3 20010813; ES 2157674 T3 20010816; GR 3036284 T3 20011031; HK 1030796 A1 20010518; JP 2000192157 A 20000711; JP 3281614 B2 20020513; KR 100318121 B1 20011222; KR 20000047372 A 20000725; PL 337312 A1 20000703; PT 1013778 E 20010830; SI 1013778 T1 20010831; TW 523549 B 20030311; US 6231638 B1 20010515; ZA 991337 B 20001219

DOCDB simple family (application)

EP 99102445 A 19990209; AT 99102445 T 19990209; BR 9901289 A 19990427; CA 2261501 A 19990212; CN 99102980 A 19990312; DE 19859354 A 19981222; DE 59900087 T 19990209; DK 99102445 T 19990209; ES 99102445 T 19990209; GR 20010401133 T 20010726; HK 00108413 A 20001227; JP 9494099 A 19990401; KR 19990007176 A 19990304; PL 33731299 A 19991220; PT 99102445 T 19990209; SI 9930005 T 19990209; TW 88102313 A 19990412; US 24592699 A 19990208; ZA 991337 A 19990219