

Title (en)

Method and device for heat treating metallic materials in a protective atmosphere

Title (de)

Verfahren und Einrichtung zur Wärmebehandlung von metallischen Werkstoffen unter Schutzgasatmosphäre

Title (fr)

Procédé et dispositif destinés au traitement à chaud de matières métalliques sous atmosphère protectrice

Publication

**EP 2135961 B1 20141001 (DE)**

Application

**EP 09007348 A 20090603**

Previously filed application

102008029001 20080620 DE

Priority

DE 102008029001 A 20080620

Abstract (en)

[origin: CN101608294A] The present invention includes a protective gas recirculation system for carburizing material gas in an industrial furnace (1), and a method and a device thereof, wherein components of carbon dioxide, oxygen and water vapour are reacted with an input reacting gas to generate carbon monoxide and hydrogen, such that the "used" protective gas is used as the protective gas recovered in a recovering space (3) to be supplied for one or more positions (2.2) in a processing space (2.1) to form a real cyclic process, and the gas carburization may be implemented continuously by saving the protective gas.

IPC 8 full level

**C21D 1/76** (2006.01); **C21D 1/773** (2006.01); **C21D 11/00** (2006.01); **C23C 8/20** (2006.01)

CPC (source: EP US)

**C21D 1/763** (2013.01 - EP US); **C21D 1/773** (2013.01 - EP US); **C21D 11/00** (2013.01 - EP US); **C23C 8/20** (2013.01 - EP US)

Cited by

EP2302081A1

Designated contracting state (EPC)

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 SE SI SK TR

DOCDB simple family (publication)

**DE 102008029001 B3 20090917**; CN 101608294 A 20091223; CN 101608294 B 20131023; EP 2135961 A2 20091223; EP 2135961 A3 20130213; EP 2135961 B1 20141001; JP 2010001567 A 20100107; PL 2135961 T3 20150331; RU 2009123209 A 20101227; US 2009314388 A1 20091224; US 8313586 B2 20121120

DOCDB simple family (application)

**DE 102008029001 A 20080620**; CN 200910146224 A 20090622; EP 09007348 A 20090603; JP 2009139871 A 20090611; PL 09007348 T 20090603; RU 2009123209 A 20090618; US 48734009 A 20090618