

Title (en)

METHOD FOR PRODUCING A GASEOUS ATMOSPHERE FOR TREATING METALS

Title (de)

VERFAHREN ZUR HERSTELLUNG EINER GASATMOSPHERE ZUR BEHANDLUNG VON METALLEN

Title (fr)

PROCEDE DE PRODUCTION D'UNE ATMOSPHERE GAZEUSE POUR LE TRAITEMENT DES METAUX

Publication

EP 2376663 B1 20190102 (FR)

Application

EP 09797083 A 20091125

Priority

- FR 2009052290 W 20091125
- FR 0858379 A 20081209

Abstract (en)

[origin: WO2010066979A1] The invention relates to a method for generating an atmosphere for heat treating metal parts in a furnace, which includes inserting, in at least one phase of the treatment cycle or at least one area of the heat treatment furnace, a mixture comprising gaseous CO₂ and ethanol in the form of fine droplets or vapour, so as to carry out the reaction between the CO₂ and the ethanol inside the furnace to form a mixture of hydrogen and CO according to the reaction: CO₂ + C₂H₅OH --> 3 CO + 3 H₂, characterised in that the injection is performed in a phase of the treatment cycle or in an area of the heat treatment furnace in which the temperature is higher than 750 °C, while CO₂ alone or optionally mixed with nitrogen is injected in the phase or phases of the treatment cycle or in the area or areas of the furnace in which the temperature is lower than 750 °C.

IPC 8 full level

C21D 1/74 (2006.01); **C21D 1/76** (2006.01); **C22F 1/02** (2006.01); **C23C 8/20** (2006.01); **C23C 8/22** (2006.01); **C23C 8/30** (2006.01); **C23C 8/32** (2006.01)

CPC (source: EP US)

C21D 1/74 (2013.01 - EP US); **C21D 1/76** (2013.01 - EP US); **C22F 1/02** (2013.01 - EP US); **C23C 8/20** (2013.01 - EP US); **C23C 8/22** (2013.01 - EP US); **C23C 8/30** (2013.01 - EP US); **C23C 8/32** (2013.01 - EP US)

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 SM TR

DOCDB simple family (publication)

FR 2939448 A1 20100611; **FR 2939448 B1 20110506**; DK 2376663 T3 20190408; EP 2376663 A1 20111019; EP 2376663 B1 20190102; ES 2715925 T3 20190607; JP 2012511633 A 20120524; JP 5529158 B2 20140625; PL 2376663 T3 20190731; PT 2376663 T 20190401; TR 201903521 T4 20190422; US 2011272637 A1 20111110; US 8679264 B2 20140325; WO 2010066979 A1 20100617

DOCDB simple family (application)

FR 0858379 A 20081209; DK 09797083 T 20091125; EP 09797083 A 20091125; ES 09797083 T 20091125; FR 2009052290 W 20091125; JP 2011540154 A 20091125; PL 09797083 T 20091125; PT 09797083 T 20091125; TR 201903521 T 20091125; US 200913133538 A 20091125