

Title (en)
METHOD FOR PRODUCING A STEEL COMPONENT PROVIDED WITH A METAL COATING PROTECTING AGAINST CORROSION AND STEEL COMPONENT

Title (de)
VERFAHREN ZUM HERSTELLEN EINES MIT EINEM METALLISCHEN, VOR KORROSION SCHÜTZENDEN ÜBERZUG VERSEHENEN STAHLBAUTEILS UND STAHLBAUTEIL

Title (fr)
ÉLÉMENT DE CONSTRUCTION EN ACIER POURVU D'UN DÉPÔT ANTICORROSION, ET SON PROCÉDÉ DE FABRICATION

Publication
EP 2414562 B1 20130116 (DE)

Application
EP 10706201 A 20100224

Priority
• EP 2010052326 W 20100224
• EP 09168605 A 20090825
• EP 10706201 A 20100224

Abstract (en)
[origin: EP2290133A1] The method for the production of a steel component provided with a metallic coating protected against corrosion, comprises providing a flat steel product that is produced from steel material containing 0.3-3 wt.% of manganese, where the steel material has an yield strength of 150-1100 MPa and a tensile strength of 300-1200 MPa, and coating the flat steel product with a corrosion protection coating that consists of zinc-nickel (ZnNi) alloy coating consisting of gamma -ZnNi-phase electrolytically deposited on the flat steel product. The method for the production of a steel component provided with a metallic coating protected against corrosion, comprises providing a flat steel product that is produced from steel material containing 0.3-3 wt.% of manganese, where the steel material has an yield strength of 150-1100 MPa and a tensile strength of 300-1200 MPa, coating the flat steel product with a corrosion protection coating that consists of zinc-nickel (ZnNi) alloy coating consisting of gamma -ZnNi-phase electrolytically deposited on the flat steel product, where the coating consists of nickel (7-15 wt.%) and also zinc and unavoidable impurities, heating a board formed from the flat steel product at 800[deg] C amounting to platinum temperature, forming the steel component from the platinum in a form tool and hardening the steel component through cooling at a temperature, in which the steel component exists itself in a condition suitable for forming compensation or hardening structure, with a cooling rate that suffices for forming the compensation structure or hardening structure. The formation of the steel component is carried out as pre-forming and the steel component is formed after heating. The zinc-nickel alloy coating consists of finished steel component of gamma -ZnNi and I ->zinc iron. A manganese-containing layer is present in the finished steel component on the corrosion protection coating, in which manganese is available in metallic or oxidic form. The manganese-containing layer has a thickness of 0.1-5 mu m and the manganese content of the manganese-containing layer is 0.1-18 wt.%. The corrosion protection coating comprises an additional zinc-layer before forming the steel component, where the zinc-layer is applied before forming the steel component on the zinc-nickel alloy coating. The thickness of the zinc-layer is 2.5-12.5 mu m. The corrosion protection coating of the finished steel component comprises a zinc-rich layer lying on the nickel-containing alloy coating. The formation of the steel component is carried out as hot forming and the forming and cooling of the steel component are carried out by a hot forming tool. The formation of the steel component and hardening are carried out in two separated processes. An independent claim is included for a steel component.

IPC 8 full level
C25D 3/56 (2006.01); **C25D 1/18** (2006.01); **C25D 5/48** (2006.01); **C25D 5/50** (2006.01)

CPC (source: EP KR US)
C21D 1/18 (2013.01 - EP US); **C21D 8/02** (2013.01 - KR); **C22C 18/00** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/28** (2013.01 - EP US); **C22C 38/32** (2013.01 - EP US); **C22C 38/38** (2013.01 - EP US); **C25D 3/56** (2013.01 - KR); **C25D 3/565** (2013.01 - EP US); **C25D 5/48** (2013.01 - EP KR US); **C25D 5/50** (2013.01 - EP US); **Y10T 428/12535** (2015.01 - EP US); **Y10T 428/12958** (2015.01 - EP US)

Cited by
WO2016193268A1; DE102013015032A1; WO2015027972A1

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)
EP 2290133 A1 201110302; EP 2290133 B1 20120418; AT E554190 T1 20120515; AU 2010288814 A1 201111110; AU 2010288814 B2 20140529; BR PI1015352 A2 20160510; CA 2758629 A1 20110303; CA 2758629 C 20161011; CN 102625863 A 20120801; CN 102625863 B 20151125; EP 2414562 A1 20120208; EP 2414562 B1 20130116; ES 2384135 T3 20120629; ES 2400221 T3 20130408; JP 2013503254 A 20130131; JP 5650222 B2 20150107; KR 101674625 B1 20161109; KR 20120054563 A 20120530; MX 2011011932 A 20111208; PL 2290133 T3 20120928; PL 2414562 T3 20130628; PT 2290133 E 20120619; PT 2414562 E 20130304; RU 2012111247 A 20131010; RU 2496887 C1 20131027; US 10053752 B2 20180821; US 2012164472 A1 20120628; US 2016160322 A1 20160609; US 9284655 B2 20160315; WO 2011023418 A1 20110303; ZA 201107674 B 20120725

DOCDB simple family (application)
EP 09168605 A 20090825; AT 09168605 T 20090825; AU 2010288814 A 20100224; BR PI1015352 A 20100224; CA 2758629 A 20100224; CN 201080037681 A 20100224; EP 10706201 A 20100224; EP 2010052326 W 20100224; ES 09168605 T 20090825; ES 10706201 T 20100224; JP 2012525942 A 20100224; KR 20117026993 A 20100224; MX 2011011932 A 20100224; PL 09168605 T 20090825; PL 10706201 T 20100224; PT 09168605 T 20090825; PT 10706201 T 20100224; RU 2012111247 A 20100224; US 201013266941 A 20100224; US 201615046884 A 20160218; ZA 201107674 A 20111019