Title (en)

Method for producing a steel component with an anti-corrosive metal coating and steel component

Title (de)

Verfahren zum Herstellen eines mit einem metallischen, vor Korrosion schützenden Überzug versehenen Stahlbauteils und Stahlbauteil

Title (fr)

Procédé de fabrication d'un composant en acier revêtu d'une coiffe métallique protégeant de la corrosion et composant en acier

Publication

EP 2290133 B1 20120418 (DE)

Application

EP 09168605 A 20090825

Priority

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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

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CPC (source: EP KR US)

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