Title (en)

APPARATUS AND METHOD FOR A HUMIDITY CONTROLLED BLOWING AFTER THE APPLICATION OF A LAYER TO A FLAT STEEL PRODUCT

Title (de)

VORRICHTUNG UND VERFAHREN ZUM FEUCHTEKONTROLLIERTEN ABBLASEN NACH DEM AUFBRINGEN EINER SCHICHT AUF EIN STAHLFLACHPRODUKT

Title (fr)

DISPOSITIF ET PROCÉDÉ POUR UN SOUFFLAGE SOUS HUMIDITÉ CONTROLÉE APRÈS L'APPLICATION D'UNE COUCHE SUR UN PRODUIT PLAT EN ACIER

Publication

EP 4299785 A1 20240103 (DE)

Application

EP 23164714 A 20230328

Priority

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Abstract (en)

[origin: WO2024002824A1] The invention relates to a device (150) and method for applying ZnAlMg layers or ZnAl layers to the front (V) and rear (R) side of a flat steel product (100), comprising the following steps: moving the flat steel product (100) from an input side to an output side (A) of a zinc-alloy melt pool; providing a dry gas flow (TG); providing a water vapour gas (WG); combining the dry gas flow (TG) and the water vapour gas (WG) in order to obtain a stripping gas (AG) mixture; determining the gas humidity of the stripping gas (AG); discharging the stripping gas (AG) through at least one gas nozzle (15) that functions to blow off the front side (V), and through at least one gas nozzle (15) that functions to blow off the rear side (R), in order to blow off the front side (V) and rear side (R) of the flat steel product (100) using the stripping gas (AG); wherein the one stripping gas flow (AG) is discharged which complies with at least one of the following two conditions (B1, B2): B1: the stripping gas (AG) has a moisture content, relative to a proportion of the gaseous water vapour gas (WG), of greater than 200ppm and less than 43700ppm, wherein the moisture content is preferably in the region of 500ppm and 9980ppm; B2: the stripping gas (AG) has a dew point (TP) of greater than - 390°C and lower than + 30°C, wherein the dew point (TP) is preferably in the region of - 290°C and + 70°C.

IPC 8 full level

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Citation (applicant)

- WO 2014033153 A1 20140306 - VOESTALPINE STAHL GMBH [AT]
- EP 0172682 B1 19890201
- DE 2033847 A1 19720105 - THYSSEN HUETTE AG
- DE 1521405 A1 19690821 - NAT STEEL CORP
- JP 2020100886 A 20200702 - NIPPON STEEL CORP
- EP 13826634 A 20131220
- JP 2008256208 A 20081023 - VOLVO CONSTR EQUIP AB
- EP 22182309 A 20220630
- C.V. TUD.H. WOOD: "Wall Pressure and Shear Stress Measurements Beneath an Impinging Jet", EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol. 13, November 1996 (1996-11-01), pages 364 - 373
- M. DUBOIS: "AISTech 2019-Proceedings of the Iron & Steel Conference", 2019, ASSOCIATION FOR IRON & STEEL TECHNOLOGY, article "Minimization of the N2 Dilution When Wiping in Air"

Citation (search report)

- [XDAI] EP 0172682 A1 19860226 - ARMCO INC [US]
- [XDAI] DE 1521405 A1 19690821 - NAT STEEL CORP
- [XAI] DE 3933244 C1 19900613
- [A] DE 2709551 A1 19780907 - INLAND STEEL CO

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