

Title (en)

COOLING SECTION WITH DUAL COOLING TO A PARTICULAR TARGET VALUE

Title (de)

KÜHLSTRECKE MIT ZWEIFACHER KÜHLUNG AUF EINE JEWEILIGE SOLLGRÖSSE

Title (fr)

SECTION DE REFROIDISSEMENT AVEC REFROIDISSEMENT DOUBLE À UNE VALEUR DE CONSIGNE RESPECTIVE

Publication

EP 3099430 B1 20171101 (DE)

Application

EP 15700669 A 20150115

Priority

- EP 14152872 A 20140128
- EP 2015050662 W 20150115

Abstract (en)

[origin: WO2015113825A1] Sections of a rolled product (1) are, as they pass through a cooling path (2), initially cooled in a first cooling phase by means of front cooling devices (6), are then not cooled in a subsequent second cooling phase, and are finally cooled again, in a subsequent third cooling phase, by means of rear cooling devices (8) of the cooling path (2). A control device (10) of the cooling path receives in each case an initial energy value (EA) exhibited by the sections before they pass through the cooling path (2). Said control device furthermore receives a target energy (E1*) and a target enthalpy (E2*). The control device (10) determines a first target cooling medium profile (K1*) on the basis of the initial energy value (EA) and the target energy (E1*). Said control device controls the front cooling devices (6) in accordance with the first target cooling medium profile (K1*) while the respective section is passing through the front cooling devices (6). The control device (10) determines a second target cooling medium profile (K2) on the basis of an expected enthalpy for the respective section in the second cooling phase and the target enthalpy (E2*). Said control device controls the rear cooling devices (8) in accordance with the second target cooling medium profile (K2*) while the respective section of the rolled product (1) is passing through the rear cooling devices (8).

IPC 8 full level

B21B 37/76 (2006.01)

CPC (source: EP US)

B21B 37/76 (2013.01 - EP US); **B21B 45/0203** (2013.01 - US); **C21D 11/005** (2013.01 - EP US); **B21B 37/74** (2013.01 - EP US); **C21D 8/0463** (2013.01 - EP US)

Citation (opposition)

Opponent : Arcelor Mittal

- US 8369979 B2 20130205 - WEINZIERL KLAUS [DE]
- US 6866729 B2 20050315 - GRAMCKOW OTTO [DE], et al
- CN 101745551 B 20111123 - BAOSHAN IRON & STEEL

Opponent : SMS group GmbH

- DE 102008011303 B4 20130606 - SIEMENS AG [DE]
- EP 2468905 A1 20120627 - SIEMENS VAI METALS TECH GMBH [AT]
- EP 2540404 A1 20130102 - SIEMENS AG [DE]
- WO 0147647 A2 20010705 - SIEMENS AG [DE], et al
- WO 03045599 A1 20030605 - SIEMENS AG [DE], et al
- WO 2004076085 A2 20040910 - SIEMENS AG [DE], et al
- EP 1244816 B1 20040310 - SIEMENS AG [DE]
- EP 1397523 B1 20070808 - SIEMENS AG [DE]
- EP 1444059 B1 20090826 - SIEMENS AG [DE]
- EP 1576429 B1 20060607 - SIEMENS AG [DE]
- EP 1596999 B1 20061220 - SIEMENS AG [DE]
- EP 1732716 B1 20070919 - SIEMENS AG [DE]
- WO 2013000677 A1 20130103 - SIEMENS AG [DE], et al
- EP 1970457 A1 20080917 - NIPPON STEEL CORP [JP]
- JP 2009148809 A 20090709 - HITACHI LTD, et al
- JP 2012000663 A 20120105 - KOBE STEEL LTD
- JP 2012011448 A 20120119 - KOBE STEEL LTD
- JP 2013000766 A 20130107 - KOBE STEEL LTD
- US 6225609 B1 20010501 - IMANARI HIROYUKI [JP], et al
- EP 2244850 B1 20130130 - SIEMENS AG [DE]

Designated contracting state (EPC)

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DOCDB simple family (application)

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