

Title (en)

COOLING SECTION WITH ADJUSTMENT OF THE COOLING AGENT FLOW BY MEANS OF PUMPS

Title (de)

KÜHLSTRECKE MIT EINSTELLUNG DER KÜHLMITTELSTRÖME DURCH PUMPEN

Title (fr)

SECTION DE REFROIDISSEMENT À RÉGLAGE DE FLUX DE LIQUIDE DE REFROIDISSEMENT À L'AIDE DE POMPES

Publication

**EP 3826780 B1 20230125 (DE)**

Application

**EP 19740415 A 20190723**

Priority

- EP 18185526 A 20180725
- EP 2019069763 W 20190723

Abstract (en)

[origin: WO2020020868A1] The invention relates to a cooling section (2) arranged within a rolling train or upstream or downstream of the rolling train. A hot-rolled product (1) made of metal is cooled by means of the cooling section (2). Application devices (6) of the cooling section (2) are supplied with a respective actual current (F) of a water-based liquid coolant (7) via a respective supply line (8) and a respective pump (10). The respective actual current (F) of the coolant (7) is applied to the hot-rolled product (1) by means of the respective application device (6). The hot-rolled product (1) is transported within the cooling section (2) in a horizontal transport direction (x) during the application of the coolant (7). A controller (11) of the cooling section (2) dynamically ascertains a respective target actuation state (S\*) for each pump (10) on the basis of a respective target current (F\*) of the coolant (7) to be applied onto the hot-rolled product (1) by means of the respective application device (6) and controls the respective pump (10) in a corresponding manner such that the respective actual current (F) delivered by each pump (10) approximates the respective target current (F\*) as much as possible at any time.

IPC 8 full level

**B21B 37/74** (2006.01); **B21B 37/76** (2006.01); **B21B 45/02** (2006.01)

CPC (source: EP US)

**B21B 37/74** (2013.01 - EP); **B21B 37/76** (2013.01 - US); **B21B 37/76** (2013.01 - EP); **B21B 45/0218** (2013.01 - EP US)

Citation (opposition)

Opponent : SMS group GmbH

- WO 2009124830 A1 20091015 - SIEMENS VAI METALS TECH LTD [GB], et al
- JP 2011218418 A 20111104 - SUMITOMO METAL IND
- EP 2767353 A1 20140820 - SIEMENS VAI METALS TECH GMBH [AT]
- WO 2014032838 A1 20140306 - SMS SIEMAG AG [DE]
- ANONYMOUS: "Pumpenregelung / Anlagenautomation", KSB, 1 April 2013 (2013-04-01), XP093137815, [retrieved on 20240305]
- PICHLER LUKAS, WEINZIERL KLAUS, SAMANTA SANDIP: "POWER COOLING AND MULTIPIC TECHNOLOGY FOR HOT ROLLED FLAT AND PLATE PRODUCTION", ANAIS DO SEMINÁRIO DE LAMINAÇÃO E CONFORMAÇÃO, EDITORA BLUCHER, SÃO PAULO, 1 September 2016 (2016-09-01) - 29 September 2016 (2016-09-29), São Paulo, pages 348 - 358, XP093137816, DOI: 10.5151/1983-4764-27900

Designated contracting state (EPC)

AL 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 RS SE SI SK SM TR

DOCDB simple family (publication)

**EP 3599037 A1 20200129**; CN 112469516 A 20210309; CN 112469516 B 20230411; EP 3826780 A1 20210602; EP 3826780 B1 20230125; US 11167332 B2 20211109; US 2021245215 A1 20210812; WO 2020020868 A1 20200130

DOCDB simple family (application)

**EP 18185526 A 20180725**; CN 201980049320 A 20190723; EP 19740415 A 20190723; EP 2019069763 W 20190723; US 201917261080 A 20190723