

Title (en)  
METHOD FOR PRODUCING A METAL STRIP

Title (de)  
VERFAHREN ZUR HERSTELLUNG EINES METALLISCHEN BANDES

Title (fr)  
PROCÉDÉ DE FABRICATION D'UNE BANDE MÉTALLIQUE

Publication  
**EP 2991783 B1 20170301 (DE)**

Application  
**EP 14720168 A 20140430**

Priority  

- DE 102013208145 A 20130503
- DE 102013221072 A 20131017
- DE 102013019698 A 20131126
- EP 2014058935 W 20140430

Abstract (en)  
[origin: WO2014177664A1] The invention relates to a method for producing a metal strip (1), in which the strip (1) is rolled in a multi-stand rolling mill, is removed behind the final rolling stand (2) of the rolling mill in the direction of conveyance (F), and is cooled in a cooling device (3). In order to achieve a favourable grain structure and a high degree of surface evenness, the strip or metal sheet (1) is subjected to additional rapid cooling (4) immediately after passing the working rollers of the final rolling stand (2), wherein the strip or the metal sheet (1) is cooled at least partially within the extent of the final rolling stand (2) in the direction of conveyance (F), wherein rapid cooling is performed by applying a coolant to the strip or metal sheet (1) from above and from below, wherein the volume flow of coolant that is applied to the strip or metal sheet (1) from below measures at least 120 % of the volume flow of coolant that is applied to the strip or metal sheet (1) from above.

IPC 8 full level  
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**B21B 45/0218** (2013.01 - EP US); **B21B 45/02** (2013.01 - RU); **B21B 2201/06** (2013.01 - EP US)

Citation (opposition)  
Opponent : ArcelorMittal  

- US 2012068391 A1 20120322 - ETO MANABU [JP], et al
- JP S6022115 A 19850204 - DELPHI CO
- US 2008257522 A1 20081023 - SCHWELLENBACH JOACHIM [DE], et al

Opponent : Primetals Technologies Austria GmbH,  

- US 2012068391 A1 20120322 - ETO MANABU [JP], et al
- JP S6022115 A 19851105 - KOBE STEEL LTD
- JP S60243226 A 19851203 - KAWASAKI STEEL CO
- WO 02070157 A1 20020912 - SMS DEMAG AG [DE], et al
- JP 2010227991 A 20101014 - JFE STEEL CORP
- EP 2505277 A1 20121003 - SUMITOMO METAL IND [JP]
- EP 2072157 B1 20170419 - JFE STEEL CORP [JP]
- M. NECATI ÖZISIK: "Heat Transfer - A Basic Approach", 1985, ISBN: 0-07-047982-8, article "Heat transfer", pages: 30-37 - 490-493, XP055438575

Cited by  
FR3112296A1; FR3112297A1; WO2021245355A1

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DOCDB simple family (publication)  
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