

Title (en)

SECONDARY COOLING METHOD FOR CONTINUOUS CAST STRAND

Title (de)

SEKUNDÄRKÜHLUNGSVERFAHREN FÜR EINE STRANGGUSSTRANG

Title (fr)

PROCÉDÉ DE REFROIDISSEMENT SECONDAIRE POUR DALLE DE COULÉE CONTINUE

Publication

**EP 4052815 B1 20230830 (EN)**

Application

**EP 20882570 A 20201028**

Priority

- JP 2019195833 A 20191029
- JP 2020040435 W 20201028

Abstract (en)

[origin: EP4052815A1] Provided is a secondary cooling method for a continuously cast strand that allows the facility to be maintained easily and allows the uniformity of the cooling capacity to be improved. The secondary cooling method for a continuously cast strand according to the present invention includes cooling a strand 5 using spray nozzles 21 having a quadrangular spray pattern. The spray nozzles 21 are arranged in the width direction of the strand between guide rolls 19 having a radius  $d$  (unit: mm) and arranged in a casting direction with a center-to-center distance  $P$  (unit: mm) in part or all of a horizontal zone 15 in a secondary cooling zone of a continuous casting machine 1. For each of the spray nozzles 21 that spray cooling water, values of the water volume density of the cooling water at two points A and B that are spaced apart in the casting direction by a distance  $L$  (unit: mm) are 50% of the maximum value of the water volume density in the casting direction, and the relation between the distance  $L$  and the center-to-center distance  $P$  satisfies formula (1) below. The strand is cooled while a nucleate boiling state is maintained in the range between the point A and the point B:  $L/P \geq 0.70$ .

IPC 8 full level

**B22D 11/124** (2006.01); **B22D 11/22** (2006.01)

CPC (source: CN EP KR)

**B22D 11/124** (2013.01 - CN EP); **B22D 11/1246** (2013.01 - CN EP KR); **B22D 11/225** (2013.01 - CN EP KR)

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 4052815 A1 20220907**; **EP 4052815 A4 20221019**; **EP 4052815 B1 20230830**; CN 114641356 A 20220617; CN 114641356 B 20240405; JP 7052931 B2 20220412; JP WO2021085474 A1 20211209; KR 102631495 B1 20240130; KR 20220069059 A 20220526; TW 202133967 A 20210916; TW I770652 B 20220711; WO 2021085474 A1 20210506

DOCDB simple family (application)

**EP 20882570 A 20201028**; CN 202080076092 A 20201028; JP 2020040435 W 20201028; JP 2021552134 A 20201028; KR 20227013451 A 20201028; TW 109137583 A 20201029