

Title (en)
COOLING DEVICE AND COOLING METHOD FOR THICK STEEL SHEET, AND PRODUCTION EQUIPMENT AND PRODUCTION METHOD FOR THICK STEEL SHEET

Title (de)
KÜHLVORRICHTUNG UND KÜHLVERFAHREN FÜR DICKES STAHLBLECH SOWIE HERSTELLUNGSAUSRÜSTUNG UND HERSTELLUNGSVERFAHREN FÜR DICKES STAHLBLECH

Title (fr)
DISPOSITIF DE REFROIDISSEMENT ET PROCÉDÉ DE REFROIDISSEMENT DESTINÉS À UNE TÔLE D'ACIER ÉPAISSE, ET ÉQUIPEMENT DE PRODUCTION ET PROCÉDÉ DE PRODUCTION DESTINÉS À UNE TÔLE D'ACIER ÉPAISSE

Publication
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Application
EP 18891282 A 20181214

Priority
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• JP 2018046067 W 20181214

Abstract (en)
[origin: EP3730633A1] It is an object to provide a cooling device and a cooling method which are used to cool a steel plate, in which the cooling rate can be adjusted over a wide range by adjusting the amount of cooling water over a wide range while the shape of the steel plate is controlled, and which, when the cooling device is used in particular for a roller quenching type cooling apparatus in which the above cooling device is disposed between steel plate restraining rolls, is effective in a narrow cooling space. The ratio P/D of a restraining roll pitch P and a restraining roll diameter D is 2.5 or less, and each of the cooling headers is connected to one of at least two cooling water supply systems. A regulating valve is attached to each of the cooling water supply systems so that ON/OFF control of water supply and flow rate control in the each of the cooling water supply systems can be performed independently of those in the rest of the cooling water supply systems. A plurality of cooling spray nozzles arranged in a width direction of the steel plate are attached to each of the cooling headers, and adjacent ones of the cooling spray nozzles that are adjacent to each other in the width direction of the steel plate are connected to respective ones of the cooling headers belonging to respective different ones of the cooling water supply systems. The flow rate densities of cooling water injected from adjacent ones of the cooling spray nozzles that are adjacent to each other in the width direction of the steel plate differ from each other. At a given injection pressure, some of the cooling spray nozzles that inject the cooling water at a maximum flow rate density can inject the cooling water at a flow rate density equal to or higher than three times the flow rate density of the cooling water injected from some of the cooling spray nozzles that inject the cooling water at a minimum flow rate density. The cooling device further includes a control mechanism that selects each of the cooling water supply systems individually and controls the each of the cooling water supply systems using a corresponding one of the regulating valves such that corresponding ones of the cooling spray nozzles inject the cooling water.

IPC 8 full level
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CPC (source: CN EP KR)
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Citation (search report)
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• [A] JP S5337510 A 19780406 - ISHIKAWAJIMA HARIMA HEAVY IND, et al
• [A] US 2015321234 A1 20151112 - UEOKA SATOSHI [JP], et al
• [AD] JP 2011167759 A 20110901 - JFE STEEL CORP
• [A] JP H10291018 A 19981104 - NIPPON KOKAN KK
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