

Title (en)

Casting wheel device with cryogenic cooling of the casting wheels

Title (de)

Gießwalzvorrichtung mit kryogener Kühlung der Gießwalzen

Title (fr)

Dispositif de laminage par coulée avec refroidissement cryogène des laminaires par coulée

Publication

EP 2581150 A1 20130417 (DE)

Application

EP 11184849 A 20111012

Priority

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Abstract (en)

The cast rolling device comprises a mold region that is bounded on a side of a casting roll (2, 2') rotating about a rotational axis (3, 3'), and a cooling device (5, 5'), by which a liquid cooling medium (7) on a surface of the casting roll is applied by a number of coolant creation facilities, where: a metal melt is molded into the mold region; a metal strand produced by solidifying the metal melt is exhausted from the mold region; and the cooling medium is supplied to the coolant creation facilities through coolant lines (8, 8'). The cooling medium is inserted with the metal melt. The cast rolling device comprises a mold region that is bounded on a side of a casting roll (2, 2') rotating about a rotational axis (3, 3'), and a cooling device (5, 5'), by which a liquid cooling medium (7) on a surface of the casting roll is applied by a number of coolant creation facilities, where: a metal melt is molded into the mold region; a metal strand produced by solidifying the metal melt is exhausted from the mold region; and the cooling medium is supplied to the coolant creation facilities through coolant lines (8, 8'). The cooling medium is inserted with respect to the metal melt, and has a standard boiling point of 20[deg] C based on normal air pressure and an operation temperature, which lies below an operation boiling point based on an operating pressure and is pressurized with the cooling medium. The rotational axis is oriented horizontally. The metal strand is exhausted downward from the mold region. An angle of a casting gap of the mold region is 90-180[deg] . The liquid cooling medium is applied on the surface of the casting roll. The coolant creation facilities are arranged below the casting roll. A screening device for thermal shielding of the metal strand against the coolant and/or thermal shielding of the coolant creation facilities against the metal strand is arranged between the metal strand and the coolant creation facilities. The coolant lines are covered with a thermal isolation. Gas separators are arranged in the coolant lines. Controllable valves are arranged in the coolant lines and designed as switching valves. The coolant creation facilities are evenly distributed/arranged over a breadth of the casting roll and controlled individually or in groups. A spacing of the coolant creation facilities of the casting roll and/or an orientation of the coolant creation facilities is more adjustable relative to the casting roll. The spacing and/or the orientation of the coolant creation facilities is more adjustable by a control device during operation of the cast rolling device. The cast rolling device further comprises a sensor, by which an actual characteristic of the casting roll or an actual characteristic of the metal strand is detected. The control device automatically determines a driving state of the cooling device.

Abstract (de)

Eine Gießwalzvorrichtung weist einen Kokillenbereich (1) auf, der an mindestens einer Seite von einer um eine Rotationsachse (3, 3') rotierenden Gießwalze (2, 2') begrenzt ist. In den Kokillenbereich (1) wird eine Metallschmelze (4) gegossen. Aus dem Kokillenbereich (1) wird ein durch Erstarren der Metallschmelze (4) erzeugter Metallstrang (4') abgeführt. Die Gießwalzvorrichtung weist eine Kühleinrichtung (5, 5') auf, über die mittels einer Anzahl an Kühlmittelaufbringeinrichtungen (6, 6') ein flüssiges Kühlmedium (7) auf die Oberfläche der Gießwalze (2, 2') aufgebracht wird. Das Kühlmittel (7) wird den Kühlmittelaufbringeinrichtungen (6, 6') über Kühlmittelleitungen (8, 8') zugeführt. Es ist bezüglich der Metallschmelze (4) inert, weist einen auf normalen Luftdruck bezogenen Standard-Siedepunkt unterhalb von 20°C - insbesondere unterhalb von -20°C - auf und weist eine Betriebstemperatur auf, die bei einem Betriebs-Siedepunkt oder darunter liegt. Der Betriebs-Siedepunkt ist auf einen Betriebsdruck (p) bezogen, mit dem das Kühlmedium (7) beaufschlagt ist.

IPC 8 full level

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Citation (applicant)

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- EP 0313516 A1 19890426 - LAUENER ENG AG [CH]
- US 2006237162 A1 20061026 - SCHLICHTING MARK [US], et al

Citation (search report)

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CN108788035A; US9457397B2

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