

Title (en)

Regulating method for the casting mould of a continuous casting mould

Title (de)

Regelverfahren für den Gießspiegel einer Stranggießkokille

Title (fr)

Procédé de réglage pour la surface de bain d'une coquille de coulée par faisceau

Publication

EP 2353752 A1 20110810 (DE)

Application

EP 10150817 A 20100115

Priority

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Abstract (en)

The control method for casting level of a continuous casting mold, comprises adjusting the inflow liquid metal into a continuous casting mold by a closing device and deducting the partially solidified metal strand by a draw device on the continuous casting mold. A measured actual value of the casting level is fed into a casting level controller, which determines a target setting for the closing device on the basis of the actual value and a corresponding target value. The measured actual value and a target setting of the closing device are fed into an interference compensator (20). The control method for casting level of a continuous casting mold, comprises adjusting the inflow liquid metal into a continuous casting mold by a closing device and deducting the partially solidified metal strand by a draw device on the continuous casting mold. A measured actual value of the casting level is fed into a casting level controller, which determines a target setting for the closing device on the basis of the actual value and a corresponding target value. The measured actual value and a target setting of the closing device are fed into an interference compensator (20). Within the interference compensator, an expected value for the casting level is determined and is subtracted from the measured actual value of the casting level. The difference is fed to a differential controller (23) within the interference compensator, where the differential controller determines a controller output signal. The controller output signal is multiplied by a superposition factor and the controller output signal is superimposed with the superposition factor multiplied controller output signal on the target setting as an interference compensation value. An inflow signal derived from the actual setting is further superimposed on the controller output signal. The superposition result is fed into an integrator (21) within the interference compensator, whose output signal corresponding to the expected value for the casting level. The expected value is subtracted for the casting level instantaneous by the actual value of the casting level. The superposition factor comprises an initial value at the beginning of the control method and during the control method is steadily increased to a final value. The initial value of the superposition factor is zero and the final value of the superposition factor is unity. The casting level controller is formed as a controller with integral action and the casting level controller of a reset time of the casting level controller is increased during and/or after the increasing of the superposition factor of the initial value to the end value. The final value of the reset time is infinite. The differential controller has a proportional gain and the differential controller is increased during and/or after the increasing of the of the superposition factor of the initial value to the end value. The initial value of the proportional gain of the differential controller is equal to a proportional gain of the casting-level controller. The differential controller is formed as a pure p-controller. Independent claims are included for: (1) a computer program; (2) a control device for a continuous casting plant; and (3) a continuous casting plant.

Abstract (de)

Der Zufluss flüssigen Metalls (3) in eine Stranggießkokille (1) wird mittels einer Verschlusseinrichtung (4) eingestellt. Mittels einer Abzugseinrichtung (8) wird der teilerstarzte Metallstrang (7) aus der Stranggießkokille (1) abgezogen. Ein gemessener Istwert (hG) des Gießspiegels (9) wird einem Gießspiegelregler (18) zugeführt, der anhand des Istwerts (hG) und eines korrespondierenden Sollwerts (hG*) eine Sollstellung (p*) für die Verschlusseinrichtung (4) ermittelt. Der gemessene Istwert (hG) und eine Sollstellung (p) der Verschlusseinrichtung (4) werden einem Störgrößenkompensator (20) zugeführt. Innerhalb des Störgrößenkompensators (20) wird ein Erwartungswert (hE) für den Gießspiegel (9) ermittelt und vom gemessenen Istwert (hG) des Gießspiegels (9) subtrahiert. Die Differenz (e) wird innerhalb des Störgrößenkompensators (20) einem Differenzregler (23) zugeführt, der daraus ein Reglerausgangssignal (e') ermittelt. Das Reglerausgangssignal (e') wird mit einem Aufschaltfaktor (k) multipliziert. Das mit dem Aufschaltfaktor (k) multiplizierte Reglerausgangssignal (e') wird als Störgrößenkompensationswert (z) auf die Sollstellung (p*) aufgeschaltet. Auf das Reglerausgangssignal (e') wird weiterhin ein aus der Iststellung (p) abgeleitetes Zuflusssignal (Z) aufgeschaltet. Das Aufschaltergebnis wird innerhalb des Störgrößenkompensators (20) einem Integrator (21) zugeführt, dessen Ausgangssignal (hE) dem Erwartungswert (hE) für den Gießspiegel (9) entspricht.

IPC 8 full level

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