

Title (en)

Method and device for heating and partially cooling workpieces in a continuous furnace

Title (de)

Verfahren und Vorrichtung zum Erwärmen und partiellem Kühlen von Werkstücken in einem Durchlaufofen

Title (fr)

Procédé et dispositif destinés au chauffage et au refroidissement partiel de pièces usinées dans un four à passage continu

Publication

EP 2336374 A1 20110622 (DE)

Application

EP 09015550 A 20091216

Priority

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Abstract (en)

The method for the treatment of workpiece (103) in a continuous furnace (101), comprises heating the workpiece by heating means during it is moved by a transport device through the continuous furnace, where the workpiece is held for a pre-determined time on a pre-determined position in the furnace after a first heating of the workpiece. The workpiece is heated again on a pre-determined position or is held at a temperature and simultaneously cooled in a defined section of the workpiece. The partial cooling is carried out in a defined area of the workpiece by a cooling body (106). The method for the treatment of workpiece (103) in a continuous furnace (101), comprises heating the workpiece by heating means during it is moved by a transport device through the continuous furnace, where the workpiece is held for a pre-determined time on a pre-determined position in the furnace after a first heating of the workpiece. The workpiece is heated again on a pre-determined position or is held at a temperature and simultaneously cooled in a defined section of the workpiece. The partial cooling is carried out in a defined area of the workpiece by a cooling body (106) that is subjected in the continuous furnace and is present in the pre-determined position of the workpiece in the area of the defined section of the workpiece. The cooling body and the workpiece have no contact. After the first heating of the workpiece, the workpiece is moved partially from the furnace and directed external of the furnace, and the transport movement in the furnace is disconnected before holding the workpiece. The workpiece is subjected by the heating means at a temperature that corresponds to hardening temperature of the material of the workpiece, during the workpiece is cooled in a defined section through partial cooling by the cooling body at a temperature that lies below the hardening temperature of the material of the workpiece. The workpiece for partial cooling through the cooling body is raised in the defined section of a stamp in a position in which the workpiece has no contact to the transport device. The workpiece is lowered after passing the pre-determined time from the stamp to the transport device and the movement of the stamp is controlled by a control device. The cooling body is cooled by a coolant and the heating of the workpiece is absorbed so that a critical martensite-forming quenching speed is fall short. The workpiece is moved back after directing in the furnace so that a first part area of the workpiece is present in the furnace during a second part area of the workpiece is present external of the furnace. An independent claim is included for a device for the treatment of workpiece in a continuous furnace.

Abstract (de)

Die Erfindung betrifft ein Verfahren zum Behandeln von wenigstens einem Werkstück in einem Durchlaufofen, bei dem das Werkstück von Heizmitteln erwärmt wird, während es mittels einer Transporteinrichtung durch den Durchlaufofen bewegt wird. Nach einer ersten Erwärmung des Werkstückes durch die Heizmittel wird das Werkstück für einen vorbestimmten Zeitraum an einer vorbestimmten Position im Durchlaufofen gehalten, wobei das Werkstück an dieser vorbestimmten Position weiter erwärmt und gleichzeitig in einem definierten Abschnitt des Werkstückes partiell gekühlt wird. Zur Durchführung des Verfahrens sieht die Erfindung eine Vorrichtung zum Behandeln von wenigstens einem Werkstück vor, umfassend einen Durchlaufofen mit einer Transporteinrichtung und Heizmitteln zur Erwärmung des Werkstückes, während es mittels der Transporteinrichtung durch den Durchlaufofen bewegt wird. Die Vorrichtung weist Mittel zum Halten des Werkstückes für einen vorbestimmten Zeitraum an einer vorbestimmten Position auf, wobei an dieser vorbestimmten Position Kühlmittel zum partiellen Kühlen des Werkstückes in einem definierten Abschnitt des Werkstückes vorgesehen sind.

IPC 8 full level

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Citation (applicant)

- EP 1426454 A1 20040609 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- DE 20014361 U1 20001012 - BENTELER WERKE AG [DE]

Citation (search report)

- [X] EP 2110448 A2 20091021 - SCHWARTZ EVA [DE]
- [I] DE 10208216 C1 20030327 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- [A] DE 102006054389 A1 20080521 - VOESTALPINE AUTOMOTIVE HOLDING [AT]

Cited by

DE102017110864B3; DE102011114764A1; DE102011114764B4; EP4015657A1; US11644240B2; WO2019106083A1

Designated contracting state (EPC)

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