

Title (en)

Method and device for producing a hardened metallic component with at least two areas of different ductility

Title (de)

Verfahren und Vorrichtung zur Herstellung eines gehärteten metallischen Bauteils mit mindestens zwei Bereichen unterschiedlicher Duktilität

Title (fr)

Procédé et dispositif de fabrication d'un composant métallique durci doté d'au moins deux zones ayant une ductilité différente

Publication

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Application

EP 11174619 A 20110720

Priority

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Abstract (en)

Producing a hardened metallic component with at least two regions of different ductility of a board (2), comprises: transporting the board quasi continuously and substantially without interruption to a press (6) through a heating furnace (3), then through a cooling- and heating zone (4); heating the board in the heating furnace homogeneously to a temperature above the austenitizing temperature; transporting a first region of the board through a furnace (8); and inserting the board into the press after the transport to the end portion of the cooling- and heating zone. Producing a hardened metallic component with at least two regions of different ductility of a board (2), comprises: transporting the board quasi continuously and substantially without interruption to a press (6) through a heating furnace (3), then through a cooling- and heating zone (4); heating the board in the heating furnace homogeneously to a temperature above the austenitizing temperature; transporting a first region of the board through a furnace (8), which is adjoining the heating furnace, during the quasi-continuous transport through the cooling- and heating zone, where the first region is held at a temperature above the austenitizing temperature without intermediate temperature reduction, and a second region of the board is transported outside of the furnace and cooled; and inserting the board into the press after the transport to the end portion of the cooling- and heating zone, when the structural transformations in the second region of the board are not completely terminated. An independent claim is also included for a device for producing a hardened metallic component, comprising a transport device for the quasi-continuous transport of at least one board, a heating furnace for the homogeneous heating of at least one board to a temperature above the austenitizing temperature and a cooling and heating zone, where transport device transporting at least one board leads through the heating furnace and the cooling- and heating zone. The cooling- and heating zone has furnace located directly on the heating furnace, which comprises a through opening extending sideways and in the direction of transport. The transport device can be arranged in the furnace over its entire width or in sections in its width direction. The remaining width section of the transport device extends through the passage opening, and runs outside the furnace, in an arrangement with a width section of the transport device, which is arranged in the furnace.

Abstract (de)

Die Erfindung betrifft ein Verfahren zur Herstellung eines gehärteten metallischen Bauteils mit mindestens zwei Bereichen unterschiedlicher Duktilität aus einer Platine (2), wobei die Platine (2) durch einen Erwärmungssofen (3), dann durch eine Kühl- und Heizstrecke (4) und anschließend zu einer Presse (6) transportiert wird, wobei die Platine (2) in dem Erwärmungssofen (3) auf eine Temperatur oberhalb der Austenitisierungstemperatur (T_A) homogen erwärmt wird, wobei während des Transports durch die Kühl- und Heizstrecke (4) ein erster Bereich (12) der Platine (2) derart durch einen sich an den Erwärmungssofen (3) anschließenden Ofen (8) transportiert wird, dass der erste Bereich (12) weiterhin auf einer Temperatur oberhalb der Austenitisierungstemperatur (T_A) ohne zwischenzeitliche Temperaturabsenkung gehalten wird, und ein zweiter Bereich (14) der Platine (2) außerhalb des Ofens (8) transportiert und abgekühlt wird, und wobei nach dem Transport am Endbereich (5) der Kühl- und Heizstrecke (4) die Platine (2) in die Presse (6) eingelegt werden kann, wenn die Gefügeumwandlungen in dem zweiten Bereich (14) der Platine (2) noch nicht vollständig abgeschlossen sind.

IPC 8 full level

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CPC (source: EP)

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Citation (applicant)

- DE 10208216 C1 20030327 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- DE 20014361 U1 20001012 - BENTELER WERKE AG [DE]
- DE 102007057855 B3 20081030 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- DE 10256621 B3 20040415 - BENTELER AUTOMOBILTECHNIK GMBH [DE]

Citation (search report)

- [XD] DE 10208216 C1 20030327 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- [A] WO 2010089103 A1 20100812 - MAGNA IHV GES FUER INNENHOCHDR [DE], et al
- [A] DE 102006054389 A1 20080521 - VOESTALPINE AUTOMOTIVE HOLDING [AT]

Cited by

EP3851546A1; US2020370831A1; EP3156506A1; EP2905346A1; EP3184655A1; CN109321723A; JP2022166196A; CN109072330A; AT522005A5; AT522005B1; EP2767599A1; CN113249556A; DE202014007144U1; US11230746B2; US11078553B2; US11142807B2; US10954579B2; DE102016201936A1; CN108884510A; KR20180119598A; JP2019508593A; WO2015110456A1; WO2017129603A1; WO2017064281A1; WO2019158142A1; US11781198B2; JP2014147963A; US2019032162A1; CN109312416A; JP2019508582A; DE102016201024A1; AT15722U1; CN109072325A; US2019032163A1; JP2019506531A; WO2017137259A1; WO2017129599A1; DE102013113119B4; JP2019506532A; JP2021179012A; US10526677B2; US1118239B2; WO2017144217A1; WO2013189597A1; WO2017129600A1; WO2018087191A1; EP3156506B1

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