

Title (en)
Method for producing a tubular profile

Title (de)
Verfahren zur Herstellung eines Rohrprofils

Title (fr)
Procédé de fabrication d'un profilé tubulaire

Publication
EP 2446977 A1 20120502 (DE)

Application
EP 11005966 A 20110721

Priority
DE 102010050248 A 20101102

Abstract (en)
The method comprises austenitizing a tube from an air-hardening steel, and performing heat transformation of a tube middle region into a U-shaped cross-section using tool upper and lower parts while retaining the ends with a circular cross-section (1). The middle region is transformed from the circular cross-section to the U-shaped cross-section to form ears between the circular ends and the middle region without the tool contact or only with the lower side, one-sided tool contact. The U-shaped cross-section is held without touching the tool upper and lower parts during the transformation. The method comprises austenitizing a tube from air-hardening steel, and performing heat transformation of a tube middle region into a U-shaped cross-section using tool upper and lower parts while retaining the ends with a circular cross-section (1). The middle region is transformed from the circular cross-section to the U-shaped cross-section to form ears between the circular ends and the middle region without the tool contact or only with the lower side, one-sided tool contact. The U-shaped cross-section is held without touching the tool upper and lower parts during the transformation of the middle region. The middle region is press cured by cooling the tool upper and lower parts during the transformation. The shaped tubular profile is cooled in air at room temperature during the formation of a mold section and cooled with water mist following the shaping step. A material of the tube section is coated before austenitization for corrosion resistance. The austenitization and the heat transformation are carried out under an inert gas atmosphere. The tubular profile is heated to 930[deg] C and held in the same temperature for several minutes before performing the heat transformation. The formed tubular profile is irradiated with glass beads, dry ice or spheres, steel balls or grains after cooling. An independent claim is included for a tubular profile as a transverse carrier for a torsion beam axle of a motor vehicle.

Abstract (de)
Die Erfindung beschreibt ein Verfahren zur Herstellung eines Rohrprofils als Querträger für eine Verbundlenkerachse eines Kraftfahrzeugs, bei welchem ein Rohr aus einem lufthärtenden Stahl in einem ersten Verfahrensschritt austenitisiert wird, in einem zweiten Verfahrensschritt unter Beibehalt der Enden mit kreisrundem Querschnitt der mittlere Bereich einstufig oder zweistufig mittels eines Werkzeugober- und -unterteils zu einem U-förmigen Querschnitt warm umgeformt wird, wobei die Übergangsbereiche zwischen den kreisrunden Enden und dem mittleren Bereich kontinuierlich vom kreisrunden zum U-förmigen Querschnitt übergehend ohne Werkzeugkontakt oder nur mit unterseitigen, einseitigem Werkzeugkontakt umgeformt werden.

IPC 8 full level
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CPC (source: EP)
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Citation (applicant)
• EP 0752332 A1 19970108 - BENTELER WERKE AG [DE]
• EP 1577404 B1 20091125 - BENTELER WERKE AG [DE]

Citation (search report)
• [I] DE 102007002448 A1 20080717 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
• [A] WO 2004033126 A1 20040422 - DAIMLER CHRYSLER AG [DE], et al
• [A] DE 102004046119 A1 20060406 - UNIV KASSEL [DE]
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• [AD] EP 0752332 A1 19970108 - BENTELER WERKE AG [DE]

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