

Title (en)

METHOD AND PRESS FOR MANUFACTURING CURED SHEET METAL COMPONENTS, IN SECTIONS AT LEAST

Title (de)

VERFAHREN UND PRESSE ZUR HERSTELLUNG WENIGSTENS ABSCHNITTSGEWEISE GEHÄRTETER BLECHBAUTEILE

Title (fr)

PROCEDE ET PRESSE POUR FABRIQUER AU MOINS EN PARTIE DES COMPOSANTS DE TOLE DURCIS

Publication

**EP 2993241 B1 20201007 (DE)**

Application

**EP 15181420 A 20150818**

Priority

DE 102014112244 A 20140826

Abstract (en)

[origin: US2016059295A1] A method for producing a sheet metal part with a press includes the steps of heating a sheet metal blank at least in regions to a above the austenitizing temperature Ac3, inserting the heated sheet metal blank into a forming tool station of the press, hot forming the sheet metal blank to the sheet metal part in the forming tool station, during which the press performs a closing movement, holding the forming tool station closed for a first holding time and cooling the formed sheet metal part during the first holding time, transferring the formed sheet metal part into a second tool station, hardening at least regions of the sheet metal part by cooling in the second tool station within the at least one second holding time, wherein the forming tool station during the closing movement of the press from an upper reversal point to a lower reversal point is moved relative to the press by at least one elastic actuating element so that the hot forming is terminated and the step of holding the forming tool station closed starts before the press reaches the lower reversal point.

IPC 8 full level

**B21D 22/02** (2006.01); **B21D 22/20** (2006.01); **C21D 1/673** (2006.01)

CPC (source: CN EP US)

**B21D 22/02** (2013.01 - EP US); **B21D 22/022** (2013.01 - EP US); **B21D 22/10** (2013.01 - CN); **B21D 22/208** (2013.01 - EP US); **B21D 24/005** (2013.01 - EP US); **B21D 35/003** (2013.01 - EP US); **B21D 37/10** (2013.01 - CN); **B21D 37/12** (2013.01 - CN); **B21D 37/16** (2013.01 - CN EP US); **B21D 53/88** (2013.01 - EP US); **C21D 1/673** (2013.01 - EP US)

Citation (opposition)

Opponent : Oxon IP B.V.

- WO 2010150683 A1 20101229 - NIPPON STEEL CORP [JP], et al
- JP 2007136533 A 20070607 - NIPPON STEEL CORP
- JP 2005199300 A 20050728 - KOMATSU SANKI KK
- US 2011283851 A1 20111124 - OVERRATH JENS [DE], et al
- DE 10049660 A1 20020425 - DAIMLER CHRYSLER AG [DE], et al
- EP 2762243 A1 20140806 - KOBE STEEL LTD [JP]
- EP 2543450 A1 20130109 - CIE AUTOMOTIVE SA [ES]
- DE 102009057382 A1 20110616 - BENTELER AUTOMOBILTECHNIK GMBH [DE]
- DE 102011011013 A1 20120816 - SCHULER SMG GMBH & CO KG [DE]
- US 2010018277 A1 20100128 - HIELSCHER CHRISTIAN [DE]
- US 2013205863 A1 20130815 - LOESCH SIEGFRIED [DE]
- DE 102008034596 A1 20100204 - BAYERISCHE MOTOREN WERKE AG [DE]
- WO 2011115539 A1 20110922 - GESTAMP HARDTECH AB [SE], et al
- HEIN PHILIPP ; WILSIUS JOEL: "Status and innovation trends in hot stamping of USIBOR 1500 P", STEEL RESEARCH INTERNATIONAL, vol. 79, no. 2, 1 February 2008 (2008-02-01), DE, pages 85 - 91, XP009101799, ISSN: 1611-3683
- "GNMLT-2 800 Invernizzi presse Transfer Press Deep Drawing - Blech tiefziehen", YOUTUBE, pages 1 pp., XP054982070, Retrieved from the Internet <URL:https://www.youtube.com/watch?v=P1RN-7iKLrW&t=34s> [retrieved on 20210720]
- TOOLING U-SME: "Sheet Metal Stamping Dies & Processes", YOUTUBE, 14 June 2014 (2014-06-14), XP055935683, Retrieved from the Internet <URL:https://www.youtube.com/watch?v=5CuJkSk4U38>

Cited by

EP4065296A4; DE102020207115B3; WO2019137910A1; WO2017121786A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**EP 2993241 A1 20160309; EP 2993241 B1 20201007**; CN 105478559 A 20160413; DE 102014112244 A1 20160303; ES 2828966 T3 20210528; US 2016059295 A1 20160303

DOCDB simple family (application)

**EP 15181420 A 20150818**; CN 201510783562 A 20150826; DE 102014112244 A 20140826; ES 15181420 T 20150818; US 201514835156 A 20150825