

Record 1 of 1

Title: Forming of Tailor Blanks for Increase in Wall Thickness at Corner of Stamped High Strength Steel Products

Author(s): Tan, CJ (Tan, Chin Joo); Abe, Y (Abe, Yohei); Mori, K (Mori, Ken-ichiro); Suzuki, M (Suzuki, Michiyuki)

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Abstract: A tailor blank was employed for stamping of high strength steel products having large wall thickness at inner corner from thin sheets. To form the tailor blank, a 2-stage local thickening process was developed for increasing the wall thickness of the blank at portion equivalent to the inner corner. In the 1st stage of the local thickening process, a ring including the portion equivalent to the inner corner is drawn, and the drawn ring is compressed with flat tools in the 2nd stage to attain a local increase in wall thickness. The 2-stage local thickening process was designed from both finite element simulation and an experiment. A tailor blank having an increased wall thickness of 8.2% was formed, and the wall thickness at the inner corner of a stamped wheel disk from the tailor blank was successfully increased by 9.6%. It was found that the tailor blanks are attractive for controlling the distributions of the wall thickness of stamped products from thin high strength steel sheets.

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Addresses: [Tan, Chin Joo] Topy Ind Ltd, Ctr Res & Dev, Toyohashi, Aichi, Japan.

[Abe, Yohei; Mori, Ken-ichiro; Suzuki, Michiyuki] Toyohashi Univ Technol, Dept Prod Syst Engn, Toyohashi, Aichi, Japan.

Reprint Address: Tan, CJ (reprint author), Topy Ind Ltd, Ctr Res & Dev, Toyohashi, Aichi, Japan.

E-mail Addresses: c-tan@topy.co.jp

Author Identifiers:

Author	ResearcherID Number	ORCID Number
Tan, Chin Joo	F-4838-2012	0000-0003-1079-592X

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