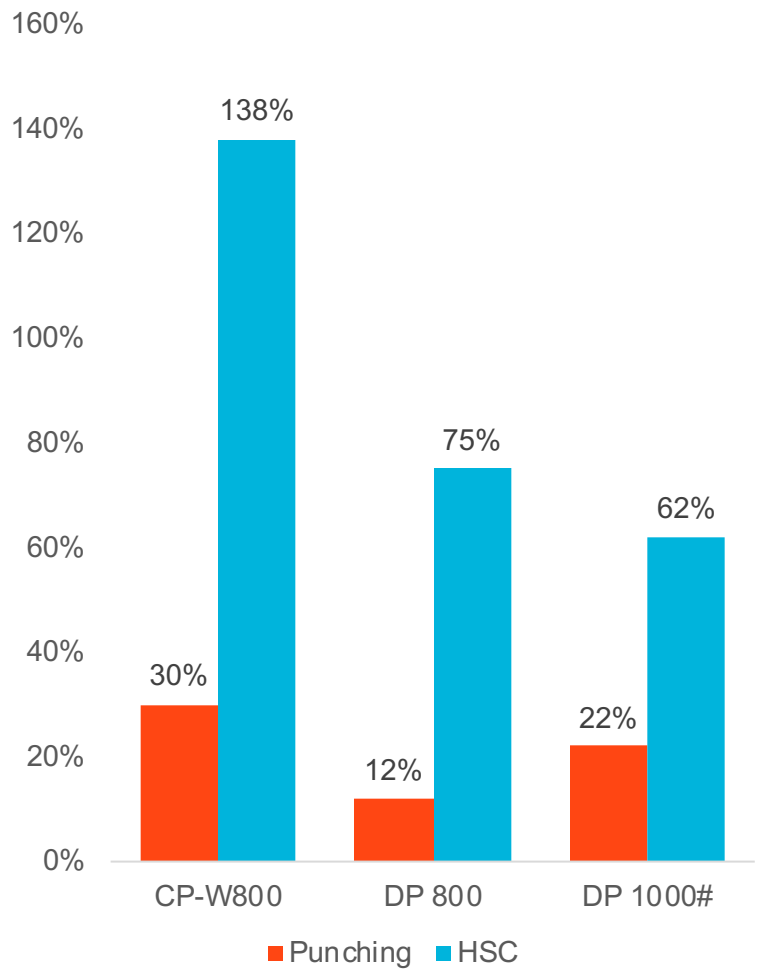
EDGE THE PRECISION BLANKS COMPANY

Chassis

FROM ALUMINUM TO STEEL

Hole expansion tests on high-strength cold-forming steels CP-W 800, DP 800 and DP 1000 (1.5 and 2 mm thickness)

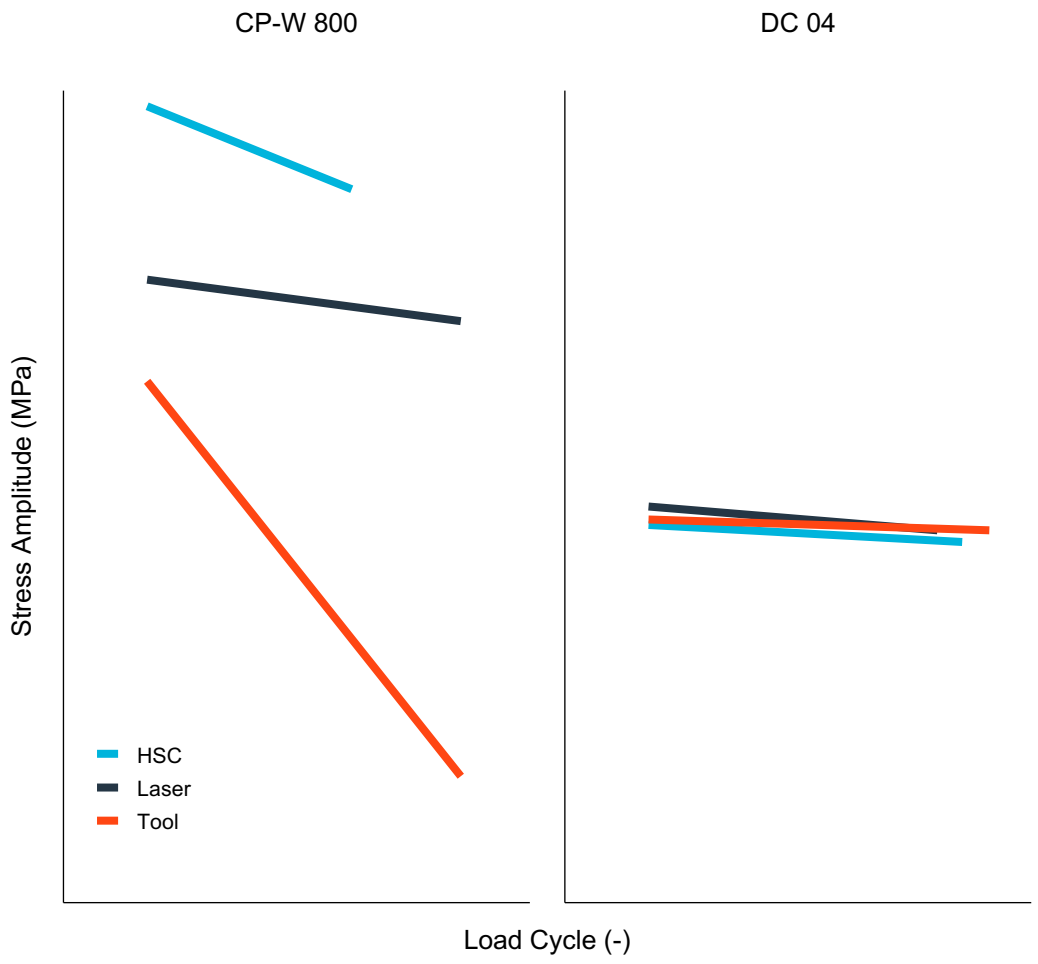
- Complex-phase steels are used extensively in chassis components and are subject to high fatigue loads. Dual-phase steels deliver excellent performance properties for high demands in body components.
- However, the grades are susceptible to edge cracking and harden strongly in the edge area due to thermal and shear processing.
- It was necessary to prove that the damage- and burr-free production of cutting edges by means of HSC counteracts these phenomena. Accordingly, ISO16630 hole expansion tests were carried out.
- The expansion capacity of HSC-cut holes is three to seven times higher compared to punched geometries.
- The same behavior was reproduced with alternative punch cone geometries such as flat-bottom punches and different angles on cone punches (50°, 120°).



FROM ALUMINUM TO STEEL

Fatigue behavior especially of CPW-800 after cutting

- With a well-known Tier 1, we carried out fatigue tests on shear-cut, laser-cut and HSC-cut high-strength steel grades and were able to prove that the fatigue fracture behavior, depending on the fatigue load, is significantly more positive for HSC-cut edges. In comparison, a fatigue-insensitive DC04.
- In particular, with the development of 3D milling processes, but also with the design of final contour cutting edges in the blank, these results can be used for the redesign and improved performance of chassis components.
- The data are not further dimensioned for reasons of confidentiality.



Thank you very much!

I am looking forward to your message!

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