

## Off-line testing of multifunctional surfaces for metal forming applications - DTU Orbit (08/11/2017)

### Off-line testing of multifunctional surfaces for metal forming applications

In this paper, Bending-Under-Tension, an off-line test method simulating deep-drawing, is chosen for investigating the effectiveness of multifunctional (MUFU) surfaces in metal forming operations. Four different MUFU surfaces, characterized by a plateau bearing area and grooves for lubricant retention, are manufactured, together with two polished references. During the tests, surface texture is the only variable. The results show how MUFU surfaces perform better than the polished references, which produce severe galling, while MUFU surfaces with low bearing area display no clear evidence of galling. Metal-to-metal contact occurs anyway, but the strip material is pulverized and deposited onto the tool instead of cold-welding to it. The pockets create a discontinuity on the texture hindering pick-up propagation.

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