Process and machine technology for structuring of design surfaces by laser remelting (FluidStruc)

Initiative: Herstellung funktionaler Oberflächen (beendet)

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Many plastic parts have structured surfaces such as leather textures on car dashboards. Usually these structures are manufactured in the injection mould by photochemical etching which is a time consuming and expensive process. Furthermore, large amounts of acids are used, not making it, therefore, an environment-friendly process. A totally new approach to structuring metallic surfaces with laser radiation is structuring by remelting. In this process no material is removed but reallocated while molten. The innovation of structuring by remelting is the totally new active principle (remelting) in comparison to the conventional structuring by photochemical etching or the structuring by laser ablation (removal). In this new process, the surface structure and the micro roughness result from a laser-controlled self-organisation of the melt pool due to surface tension. The project FluidStruc aims to investigate process fundamentals of this new manu- facturing process as well as the machine technology and to utilise the special benefits of the new active principle for industrial manufacturing.

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