Abstract:
This paper provides general information about the qualification of driving as an on-demand manufacturing concept for the production of individualized sheet metal products. Driving allows the creation of almost any 2D or 3D geometry, but it is a highly interactive, manual production process. Due to the inevitable variations of the incremental forming process (mechanical properties, tribology, wear etc.) and the high number of forming steps, it cannot be automated by traditional approaches. At the Institute of Metal Forming and Casting (Technische Universitaet Muenchen) a kraftformer machine has been equipped with measuring and controlling instrumentation. An optical online measurement system is installed to detect any geometry deformation of the current work piece and to visualize the deviation between the actual and the stored reference geometry during the whole production process. This variance comparison is the first step for planning any following incremental forming actions based on acquired and/or learned knowledge. The second step is the integration of an industrial robot for work piece handling and the automation of the whole
manufacturing process. The last step is the integration of neural networks to predict production strategies for any desired unique geometry.

Stichworte: Driving; Incremental forming; Sheet metal

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