Abstract:

Driving of sheet metal is one of the oldest manufacturing methods and does not require highly expensive single-purpose forming tools. The current working process is carried out manually using inexpensive kraftformer machines and universal tool sets. Driving allows the creation of almost any 2D or 3D geometry and is therefore very powerful, but a highly interactive process that is difficult to be automated just by traditional approaches. For this purpose, the incremental forming method driving is chosen as a perfect test bed to demonstrate challenging, novel cognitive forming methods in the future. To handle the complexity of this incremental and work piece dependent process, powerful sensors, flexible actors and sophisticated cognitive capabilities must be involved. At the institute for metal forming and casting 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. This paper provides general information about the application of cognitive methods for forming and with it the qualification of driving as a manufacturing concept for the production of individualized sheet metal products.

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