New Approach for Process Planning and Optimization in Sheet Metal Spinning

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Abstract. Due to the high complexity and the large number of possible geometries to be formed, a systematic design of the sheet metal spinning process is, up to now, difficult and time consuming. Sustainable models of the spinning process do not exist so far. Due to this, a new approach for the systematic design and optimization of the spinning process has been developed. In a first step of the planning sequence, a prediction of initial parameter settings is given by a case-based-reasoning approach. A first adaptation of the pre-selected parameters is then realized on a fuzzy-based model. In the next step, a model based optimization using statistical design of experiments is performed. For this, a new statistical approach has been developed being optimized regarding the requirements of the spinning process. In this paper, the methods used and the implementation of the approach in a process planning software are described. The approach is verified by the example of setting up a process to manufacture a cylindrical model workpiece.