Flexibly Rolled Sheet Metal and Its Use in Sheet Metal Forming

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Abstract. Light weight construction is a construction philosophy which aims at maximum weight reduction. Reasons for light weight construction can be very diverse. One main cause can be to improve fuel efficiency. This can be achieved by use of load optimised sheet thicknesses. Another reason can be the increasing demands on crash performances by optimisation of local properties.

This paper presents two production processes of flexibly rolled blanks, one with longitudinal and the other one with latitudinal thickness transitions. Both of them have been developed at the Institute of Metal Forming (IBF) and yet found their way into series production. The potential of these processes is already proved by a large range of products, especially in automotive industries.

Some special deep drawing tests with flexibly rolled blanks have been conducted and their results are presented. Also process simulation has been carried out at the IBF and will be explained. One possibility with regard to optimise these products is shortly introduced. Completing this paper an outlook is given.