

## **Research of Possibilities to Influence the Metal Cross-Section Deformation during Cold Rolling with the Help of Local Deformation Zone Creation**

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**Abstract :** Rolling disturbances often arise which might lead to defects such as nonflatness, warpage, corrugation, etc. Numerous methods of compensation for such disturbances are well known. However, most of them preserve the initial form of transverse flow of the strip, such as convex, concave or asymmetric (for example, sphenoid). Sometimes, the form inherited (especially asymmetric) is undesirable. Technical solutions have been developed which include providing conditions for transverse metal flow in deformation zone. It should be noted that greater reduction is followed by transverse flow increase, while less reduction causes a corresponding decrease in metal flow for differently deformed metal lengths to remain approximately the same and in order to avoid the defects mentioned above. One of the solutions suggests sequential strip deforming from rectangular cross-section profile with periodical rectangular grooves back into rectangular profile again. The work was carried out in DEFORM 3D program complex. Experimental rolling was performed on laboratory mill 150. Comparison of experimental and theoretical results demonstrated good correlation.

**Keywords :** FEM, cross-section deformation, mechanical engineering, applied mechanics

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