# Kinematic analysis features of cycloidal processing schemes of non-circular profiles

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*The author has analyzed features of forming non-circular profiles described by cycloidal curves and their equidistant curves. The research for the processing schemes of multifaceted details by an eccentric circular cutter has been carried out. A method of producing a multi-faceted profile by running of the forming circles related to the work piece and the cutter has been applied. Study of the scheme parameters and the relative trajectories of the tool were performed by using unified mathematical form of expressing cycloidal trajectories in the form of parametric equations. The influence on the shape of the faces of the machine parameters, tools and relationship of angular velocities of absolute movement is shown. To illustrate this, the parameters of processing schemes by an eccentric cutter ensuring the straightness of the product faces were determined. When studying product forms, the cutter center path was considered. The effect of the change of the shear layer cross-section and of kinematic cutting corners on the patterns of change in the force parameters of processing was educed. Schemes of cutting allowance were formed by using modern information technologies. The author provides features of passing certain relative trajectories of the cutter peaks via allowance. Recommendations on the use of research results are offered.*

***Keywords:*** *kinematic analysis, forming, non-circular profile, cycloidal processing scheme, cutting corners, scheme of cutting allowance, the kinematic error.*

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