

«Development of computer-aided of technological machining operations of complex surfaces on machine-tools with CNC»

State registration: 0109U000818

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Results.

Conception of optimum control machining is first developed on a machine-tool with CNC on a priori information through system of the automated preparation of the programs depending on the conditions of cutting in the direction of shape-generating co-ordinate and time of machining. The presence of optimum depth of cutting is well-proven at multi-pass machining, that allowed to formalize the task of planning of trajectories on draft machining and task optimization of the cutting mode. Thus, a criterion after which it is possible to design the trajectories of relative motion of instrument and purveyance on draft-passage-ways is first found.

The programmatic module, as constituent of computer-integrated CAD/CAM-system of technological preparation of lathe machining, is first created on a machine-tool from CNC, which in the automatic mode, on the stage of design, expects not only the trajectories of forming motions but also optimum mode of cutting and forecasts the wear of instrument on a back surface.

Found clarification and presentation in the most general form limitations, which form the region of acceptability on a phase plane a «longitudinal serve is frequency of rotation of spindle, which allowed to create the algorithm of automatic determination of the optimum mode of cutting at every step design.

A new mathematical model and software is developed for the calculation of constituents of cutting force at sharpening, which takes into account both the cutting mode and geometrical parameters of cutting part of instrument, that allowed substantially to shorten empiric part and do more universal procedure of determination of the optimum mode of cutting.

A new mathematical model, algorithm of numeral method and software, is developed for determination of roughness at sharpening, which is composition and takes into account both determined and casual constituents of process.