

CAI VERIFICATION OF THE MEASURING PATH FOR CMM INSPECTION

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Abstract

Coordinate measuring machine (CMMs) are recognized as a flexible element of production metrology, and they are applicable for inspection planning and measurement of a wide range of metrological tasks (tolerance). From the other side, metrological tasks depend on geometrical and metrological complexity, desired quality and number of tolerance, etc. of workpiece and it is very important to verify measuring process before execution of measuring path on CMM. Verification of the measuring path for inspection planning of workpiece is important in order to visualize collision check between main elements of the measurement systems (measuring sensor, workpiece and fixture). In this paper, a proposed concept for verification of the measuring path through simulation is realized on the configured virtual CMM in the CAD/CAM environment for inspection of prismatic measuring parts which consists of the basic geometric features. The generated measuring path for inspection planning at the CMM consists of three sets of points. On the basis of these three sets of points, the total measuring path without collision is generated and verified by simulations on a configured virtual CMM through several examples of standard forms of tolerance-tasks. The verification of measuring path is first visualized in MATLAB and then through simulations in CMM module of PTC Creo. Output from the simulation on virtual CMM, i.e. generated measuring path, is saved in CL file (DMIS program). When CL file is generated, development of a postprocessors leave the possibility for creation of control data list for different CMMs. Proposed concept for CMM simulation and its output could be useful for other CMMs producer.

Keywords

CMM, CAI, Simulation, Inspection Planning, Measuring Path

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