

Inter Laboratory Comparison with Coordinate Measuring Machine and Uncertainty Analysis

Authors : Tugrul Torun, Ihsan A. Yuksel, Sinem On Aktan, Taha K. Veziroglu

Abstract : In the quality control processes in some industries, the usage of CMM has increased in recent years. Consequently, the CMMs play important roles in the acceptance or rejection of manufactured parts. For parts, it's important to be able to make decisions by performing fast measurements. According to related technical drawing and its tolerances, measurement uncertainty should also be considered during assessment. Since uncertainty calculation is difficult and time-consuming, most companies ignore the uncertainty value in their routine inspection method. Although studies on measurement uncertainty have been carried out on CMM's in recent years, there is still no applicable method for analyzing task-specific measurement uncertainty. There are some standard series for calculating measurement uncertainty (ISO-15530); it is not possible to use it in industrial measurement because it is not a practical method for standard measurement routine. In this study, the inter-laboratory comparison test has been carried out in the ROKETSAN A.Ş. with all dimensional inspection units. The reference part that we used is traceable to the national metrology institute TÜBİTAK ÜME. Each unit has measured reference parts according to related technical drawings, and the task-specific measuring uncertainty has been calculated with related parameters. According to measurement results and uncertainty values, the En values have been calculated.

Keywords : coordinate measurement, CMM, comparison, uncertainty

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