Russian Engineering Research 2017 vol.37 N4, pages 344-347

## Geometric errors of numerically controlled milling machines

Khusainov R., Khisamutdinov R., Yurasov S., Belov S., Goryacheva O., Grechishnikov V., Isaev A., Romanov V.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

## **Abstract**

© 2017, Allerton Press, Inc. Maintenance of the machining precision of numerically controlled machine tools is considered. Equipment is developed for testing the machining precision of a circular trajectory in the machine tool. On the basis of the test results, parameters for compensating some geometric errors may be determined.

http://dx.doi.org/10.3103/S1068798X17040116

## **Keywords**

diagnostics, geometric precision, metal-cutting machines

## References

- [1] Isaev, A.V. and Grechishnikov, V.A., Machining curvilinear sections by means of cutting plates with a linear edge, Russ. Eng. Res., 2010, vol. 30, no. 4, pp. 413-417.
- [2] Introduction to Precision Machine Design and Error Assessment, Mekid, S., Ed., Boca Raton: CRC Press, 2008.
- [3] Siemens User's Manual SINUMERIK 840D/840Di/810D: Extended Functions, 2004, no.3.
- [4] GOST (State Standard) 30544-97: Metal-Cutting Machines. Methods of Circular Trajectory Accuracy and Constancy, Moscow: Izd. Standartov, 2001.
- [5] Lee, K.-I. and Yang, S.-H., Measurement and verification of position-independent geometric errors of a fiveaxis machine tool using a double ball-bar, Int. J. Mach. Tools Manuf., 2013, vol. 70, no. 7, pp. 45-52.
- [6] Yanga, J., Mayer, J.R.R., and Altintas, Y., A position independent geometric errors identification and correction method for five-axis serial machines based on screw theory, Int. J. Mach. Tools Manuf., 2015, vol. 95, no. 8, pp.
- [7] GOST (State Standard) 27843-2006: Test of Machine Tools. Determination of Accuracy and Repeatability of Positioning Numerically Controlled Axes, Moscow: Standartinform, 2007.
- [8] Grechishnikov, V.A. and Pivkin, P.M., Modeling of development of roughness of the product depending on parameters of cutting tool and shape of forming mold at mechanical processing, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2014, no. 4 (31), pp. 59-66.
- [9] Petukhov, Yu.E. and Domnin, P.V., Shaping by a shaped helical surface by standard direct profile tool, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2011, no. 3, pp. 102-106.
- [10] Petukhov, Yu.E. and Domnin, P.V., Determination of kinematic rear corners during processing of the screwshaped surfaces by standard straight profile cutters, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2014, no. 2 (29), pp. 27-33.
- [11] Grechishnikov, V.A., Kolesov, N.V., and Yurasov, S.Yu., Roughness at the cylindrical milling, Vestn. Mosk. Gos. Tekhnol. Univ., Stankin, 2012, no. 4 (23), pp. 49-50.

