

Mapping geometry errors of five-axis machine tools using decouple method

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Abstract

Abstract: The present study develops a new compensation method, the decouple method, for geometry errors of five-axis machine tools. The method proposed is based on a model that the tool orientation error only related to motion of machine rotation axes, and it further calculates the error compensations for rotation axes and for linear axes separately, in contrast to the conventional method of calculating them simultaneously. Namely, determine the compensation of machine rotation axes first, and then calculate the compensation associated with the machine linear axes. Finally, the effectiveness of the decouple method is evaluated in simulation. The new compensation mechanism proposed in this study can effectively compensate geometry errors of five-axis machine tools.

Keyword : Keywords: five-axis machine tools, error compensation, geometry errors.