

Patcharin Wadee 2012: An Application of Ball Bar for Five axis CNC Machine Static Error Compensation. Master of Engineering (Industrial Engineering),
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Five-axis CNC increases productivity in manufactures because the structure of five axis machines has two rotary axes. These rotary axes have also machining complicated shapes therefore high accuracy are required. The accuracy reduces by various errors. Static error is different of required position and actual position that can be represented distance between worktable and machine tool that were produced by motion error of machine. That is translational error occurred in linear axis and angular error from rotational axis. Translational error has high precision device to measure. In this research, laser interferometer is used for calibrated linear position of the machine. Ball Bar is effective device which widely used to measured circular of machine. It measure angular motion error by consider the difference radius of circular movement. A proposed mathematical model is considered to calculate the rotational error of A and C axis by Ball Bar measuring results. After compensation, the experiment has demonstrated that the proposed method improves accuracy of rotary axis CNC machine. The result shown after compensation, rotational error about A-axis was reduced 31.55 % and rotational motion error about C-axis was reduced 8.00 %.

Student's signature

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