

**Dissertation title:**

**Modeling Method for Simulation of Assembly Variances**

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High quality machine tools are necessary for industrial production of precise workpieces. In this work a method is displayed, which allows to monitor and ensure the production of these machine tools with a constant precision and quality. This method is based on measuring of the complete friction of the linear axes by current of the servo motors, which are available in the NC-controller. Thereby, a deviation between identical machine tool axes becomes obvious. This deviation allows drawing conclusions on the assembly conditions of components. At the machine tool maker's production this measurement can be conducted and be used as reference during its life expectancy in order to supervise changes of behavior. The discussed measurements have been conducted at machine tools during start up and at a test stand with distinct assembly failures. Furthermore, a modeling method for simulation of assembly variations is introduced. By this simulation method effects on friction can be estimated at an early stage of the product development. Hence, critical assembly steps can be determined and assessed during the design phase. This allows an improvement of assembly planning by increase of effort in critical steps, whereas it becomes possible to reduce the effort for noncritical steps.