



PAPER No : RJUNE-05

Thermal Modelling of a Five axis VMC using Finite Element Analysis

Anjali N. Davea Pinank A. Patelb Mr. J. P. Mehtac Dr. S. S. khandared
a,b Assistant Professor L.E. College Morvi, Gujart India
cR & D executive, Mechpower industries,Rajkot,Gujarat,India
dEx. Principal,B.D.College of Engineering , Nagpur ,MS , India

Thermal analysis has become one of the most important research topics to fully consider the thermal performance optimized design in the machine tool design stage and to improve the machining precision. By controlling the magnitude and distribution of the temperature for key parts, the objective of reducing spindle thermal deformation relative to the workbench can be achieved.

Thermal deformation modelling and compensation is a method to improve machining precision during the cutting process after the machine tool design and manufacture are finished. The implementation of this method comprises with experimental measurements on machine tool thermal deformation and temperature fields, building the thermal deformation model using software. This research mainly adopted practical control methods to predict the thermal performance of a vertical machining centre.

Keywords— thermal performance, machining, precision, machine tool, machining centre