

## High Revolving Speed Spindles Definition Due to Transient Vibration Conditions

Mehdi S. Zangeneh<sup>(1)</sup>, **Seyed S.H. Yazdi**<sup>(2)</sup>

(1) *Sharif University of Technology, Tehran, Iran*

(2) *University of Tehran, Tehran, Iran*

Spindle is the main part of Machine tool that its products face finishes are influenced strongly by vibrations through cutting process. With consideration a conventional turret spindle and new production conditions that require striker tolerance criteria, through a Finite Element Transient Analysis (FEA), terms of new spindles, their bearing types and arrangement was defined. The bearing sets number must restricted to two sets (number of bearings has to minimized to avoid imbalanced masses). Angular trust bearing for spindle front (where the chuck or other are installed) and Taper roller bearings for other side must be used. High revolving speeds lead us to use stiffer material to reduce spindle's weight. It was confirmed by Finite Element Analysis that new spindles had smaller vibration amplitude, so more accurate tolerances can be achieved more easily. Other advantages are lesser energy consumption and more economic machine tools.

[View the extended summary](#)