

## **A Study on the Application of Accelerated Life Test to Electric Motor for Machine Tools**

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**Abstract :** This paper introduces the results of the study on the development of accelerated life test methods for the motor used in machine tools. In recent years, as well as efficiency for motors, there is a growing need for research on life expectancy of motors. It is considered impossible to calculate the acceleration coefficient by increasing the rotational load or temperature load as the acceleration stress in the motor system because the temperature of the copper exceeds the wire thermal class rating. This paper describes the equipment development procedure for the highly accelerated life test (HALT) of the 12kW three-phase squirrel-cage induction motors (SCIMs). After the test, the lifetime analysis was carried out, and it is compared with the life expectancy by finite element method (FEM) and bearing theory.

**Keywords :** acceleration coefficient, bearing, HALT, life expectancy, motor

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