Estimation of Elastic Deformations and Fracture Peripheral Speeds of Grinding Wheels due to Centrifugal Forces by Means of Grinding Wheels Model

Abstract

In grinding operation, centrifugal forces act to grinding wheels, and expand and/or deform the grinding wheels. Additionally, in high rotating speeds, grinding wheels are destroyed by the centrifugal force in case of that centrifugal force is over fracture strength of grinding wheel. In this study, in order to obtain elastic deformations and fracture peripheral speeds of grinding wheel, grinding wheel model is proposed. And, it is clarified that elastic deformations of grinding wheel and fracture peripheral speeds of grinding wheel can be calculated using grinding wheel model and FEM analysis without actual rotating tests.