

Data synchronization for dynamic contact measurement

Abstract

This paper explains the method to synchronize speed and distance for contact size measurement. The contact size was measured using ultrasound that strikes continuously onto the surface. Part of the ultrasound energy was transmitted and another part was reflected. As this happens, there is a reduction in pulse amplitude due to the fraction between the reflected energy and the transmitted one. A series of reflection pulses were obtained as the ultrasound pulses strikes. These amplitude pulses reduce when enters contact and eventually return to normal. If the speed and distance of a track were measured, then it is possible to measure the contact size as the contact passing. However, the speed and ultrasound pulsing rate must be synchronized so that the distance is proportionate to speed changes. In this work, a 6410 deep groove ball bearing were used to measure contact size in circular motion. The method, calculation steps and validation are shown. It was found that the distance remained constant as the speed and pulsing rate changed proportionally.