
Identifiant de la contribution : **228** Type : **non spécifié**

# ”FDP2#1 - Impact of low ring waviness orders on Hybrid ball bearing under high speeds”

*mercredi 12 juillet 2023 10:40 (20)*

Deep groove ball bearings (DGBBs) have a crucial role in various rotating equipment applications, particularly in high-performance systems such as electric vehicle Powerpacks, where noise and vibration levels are of utmost importance. The roundness and surface shapes of the ring races significantly influence the performance and service life of DGBBs. But the fact remains that in the bearing industry, it is well-known and widely accepted that contact surfaces between bearing components are never perfectly smooth, even with the most advanced grinding and honing processes. Despite manufacturers’ efforts to achieve high levels of precision, there are always inherent surface irregularities and deviations on the ring races and ball surfaces that generate vibrations due to uneven ball load distribution. To address this issue, DGBB manufacturers have developed vibration classification systems that help to classify the vibration levels of DGBBs. These classification systems are based on international standards, such as ISO and ANSI, and they provide a standardized way of measuring and classifying the vibration levels of DGBBs. The vibration classification system for DGBBs is based on the vibration velocity and is measured in the micron scale (Î¼m/s), that means that those defects at manufacturing stage still of very small amplitudes and are in general not harmful under applicative conditions. However, excessive surface irregularities, such as deep scratches, indentations, or waviness orders with high amplitudes, lead to increased friction and localized stresses that affect bearing performance and may result in premature failure. In this article, inner and outer ring low waviness orders are studied on Hybrid Deep Groove Ball Bearings (DGBB). Both numerical model and, experimental tests were carried out to study the effect of rings waviness on hybrid bearing under high rotation speed.

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**Classification par session :** Survishno 8 / Fault Diagnostics and prognostics 2