APPLICATION NOTES

Applying mobile hardness on bearings with SONODUR 3

Sorting bearings is essential for ensuring performance, reliability, and durability, as hardness directly affects load-bearing capacity and wear resistance. Variations in hardness can compromise these properties, making precise testing critical. However, traditional hardness testing relies on destructive techniques that waste materials and time, with results heavily dependent on the operator's skill. In high-volume production, testing every part is impractical, leading to quality control gaps, increased costs, and the risk of defective components reaching customers. To address these challenges, SONODUR 3 offers a non-destructive solution using ultrasonic contact impedance (UCI) technology, enabling accurate hardness measurement without damaging components.

Application solution

The SONODUR 3 allows precise sorting of parts by setting maximum and minimum allowable hardness values according to specific requirements. Measurements are quick and straightforward using the UCI probes, delivering instant results. The device not only displays the hardness value but also provides immediate feedback through a color-coded display, clearly indicating whether the part falls within the acceptable range or not.

Benefits of the solution

- Non-destructive testing: The small indentation ensures that parts remain undamaged during testing, preserving their integrity for use.
- Ease of Use: Intuitive operation minimizes the need for extensive operator training, reducing downtime and the likelihood of human error
- Versatile Application: Designed to handle various part geometries and sizes, such as cylindrical bearings, gears, and small machined components, ensuring broad applicability across industries.

Technical setup

The SONODUR 3 is equipped with a flat-guided SONO S50 UCI probe, optimized for precise hardness measurements on components like bearings. For smaller bearings or components with reduced diameters, the H50 probe is recommended, ensuring accurate performance for various sizes.

Comparable applications

- Automotive Industry: Testing gears, axles, and components for hardness ensures durability in high-stress environments.
- Aerospace Industry: Hardness testing ensures aircraft components like wing fasteners and structural supports meet strict specifications and withstand extreme conditions.
- Medical Device Manufacturing & Small Machined Components: Verifying the hardness of small precision components ensures reliability in surgical tools, implants, and other high-precision applications.

Application tips

- Surface Preparation: Clean the surface and remove any contaminants that may interfere with the UCI measurements.
- Use of a Stand: Secure SONODUR 3 probes on a support or stand to enhance measurement stability and achieve consistent hardness readings.
- Data Logging: Utilize the data storage features on SONODUR 3 to log results for each part tested, ensuring traceability and accountability for quality control.
- Automated Volume Testing: For high-volume operations, Magnatest TCL performs fully automated, non-destructive eddy current testing. It sorts parts based on indicated Good and Not Good categories, ensuring efficient and consistent quality control in production environments.

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