

Traceability of Gears -- New Ideas, Recent Developments

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American Gear Manufacturers Association



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[The statements and opinions contained herein are those of the author and should not be construed as an official action or opinion of the American Gear Manufacturers Association.]

Abstract

In gear-cutting technique, some tolerances for cylindrical gears lie within the range of the national standards measurement uncertainty. This situation is unsatisfactory. The Physikalisch-Technische Bundesanstalt (PTB) as the national metrology institute of Germany has, therefore, made it its job to improve this state of affairs. It has developed a concept based on three fundamental goals: reduction of the uncertainty of measurement at PTB, construction of product-like standards, and shortening of the calibration chain from PTB to the product. One of the focal points is the development of a standard measuring device. For this, additional metrological devices are integrated into a coordinate measuring machine. This allows the measured values to be determined with interferometric accuracy. Moreover, in the future, the flanks will be evaluated on the basis of a sculptured surface model. By this it will be possible to achieve considerably higher calibration accuracy, not only for spur gears, but also for internal gears and helical gears.

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