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PM Materials for Gear Applications

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PM Materials for Gear Applications

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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

This paper reviews recent achievements in gear tooth bending strength and rolling contact fatigue resistance of powder metal materials in comparison to wrought steel materials for automotive applications. Prototype powder metal gears and rolling contact fatigue (RCF) rollers were pressed from commercially available low-alloyed iron powder mixes, sintered, surface densified, case hardened and optionally hard finished using commercially available equipment for all manufacturing steps. The reference gears and rollers were machined from common wrought steels. The results evaluated on the prototypes show that powder metal materials meet wrought machined materials' gear tooth bending strength and RCF-resistance.

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