

Our Readers Discuss Gear Rattle, Gear Books, and *Gear Tech*

Investigation of Gear Rattle Phenomena

The article by Messrs. Rust, Brandl and Thien was very interesting in its description of the problem and of some of the interactions which occur.

The authors have concentrated exclusively on the excitation due to torsional vibrations from the engine, but in general this is only part of the problem. As they correctly deduce, it is angular acceleration that is critical, but in many cases, the angular acceleration is due to a combination of engine torsionals and gear transmission errors.

At 1,500 rpm with 0.5% speed fluctuation twice per revolution the angular acceleration due to the engine is 250 rad/s^2 . A transmission error of $1 \mu\text{m}$ at 30 mm radius on a gear at a frequency of 30 times per revolution (once per tooth) gives an angular acceleration of 740 rad/s^2 at this speed, and so can greatly assist rattling.

The effects of gear transmission errors on rattle can normally only be neglected if the gears are quite exceptionally accurate. However, the gear errors tend to give impacts on the drive flank only, rather than the leading and idling flank impacts associated with engine torsionals.

J.D. Smith
Cambridge University
Cambridge, England

Good Gear Books Revisited

I believe you will still find *Wire Measurement of Screws, Gears, Splines, and Worms* by W. F. Vogel available

from Joseph Silvagi, Camdale Precision, Inc., 15900 Common Road, P. O. Box 295, Roseville, MI 48066. He also has copies of Vogel's *Involutometry & Trigonometry*.

Robert E. Smith,
R. E. Smith & Co., Inc.
Rochester, NY

Rave Reviews

An addendum to one of the responses to our Readers' Survey in our last issue...

I realize that a cover sheet was not required for this faxed response, but I felt duty bound to elaborate on my impressions of *Gear Technology*.

...I have been on the mailing list since the first issue of the magazine. Since then I have saved every issue. EVERY issue. Information gleaned from its pages has provided me technical material with which to solve problems, spectacular covers to grace the appearance of my office, and historical commentary that added color and content to lectures I have given on the subject of gears.

The series of drawings by DaVinci on the early issues, the photo of the "South Pointing Chariot," and articles on everything from the basics to the arcane make this magazine nothing less than a collection of superlatives.

Keep up the excellent work!

Raymond E. Shaw
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VIEWPOINT

We welcome your opinion. Share your viewpoint with the rest of our readers. Address your letters to The Editor, *Gear Technology*, P. O. Box 1426, Elk Grove Village, IL 60009. We reserve the right to edit letters when space requirements demand it.