



## Announcement

# Award-Winning Research of Professor F.L. Litvin Published in *Computer Methods in Applied Mechanics and Engineering*

It is with great pleasure that the Editors and Publisher of the journal congratulate Professor F.L. Litvin on two recent awards for contributions to the development of the modern theory of gearing and enhanced computerized design of gear drives. Professor Litvin is a distinguished contributor to *Computer Methods in Applied Mechanics and Engineering*, and several of his contributions to the journal are closely associated with the research for which the awards were made.

**The Thomas A. Edison Patent Award** was established in 1997 by ASME, and is bestowed in recognition of a patented device or process that has the potential of significantly enhancing some aspect of mechanical engineering. The 2004 Award was made for USA Patent 6,146,253 (2000) entitled 'Apparatus and method for precision grinding face gear', which revolutionizes the manufacturability and achievable quality of hardened face gears and reduces the weight of helicopter transmissions, significantly lowering fuel requirements, emissions, and operating costs. Publications that are based on the invented method of generation are:

F.L. Litvin, A. Fuentes, C. Zanzi, M. Pintiggia and R.F. Handschuh, Face-gear drive with spur involute pinion: geometry, generation by a worm, stress analysis. *Comput. Methods Appl. Mech. Engrg.* 191 (2002) 2785–2813.

F.L. Litvin, I. Gonzalez-Perez, A. Fuentes, D. Vecchiato, B.D. Hansen and D. Binney, Designm generation and stress analysis of face-gear drive with helical pinion, *Comput. Methods Appl. Mech. Engrg.* (2004) in press.

**LEW-17596 Award of John H. Glenn Research Center, Cleveland, Ohio**, 'Improved gear shapes for face worm gear drives'. The award was made to F.L. Litvin, A. Nava, Q. Fan and A. Fuentes. These shapes offer potential for increasing precision and reducing vibration and noise. One of the main advantages of the proposed methods for generation is that the cutting speeds are independent of the shape-generation process, making it possible to choose cutting speeds that are optimum with respect to requirements to minimize temperatures and deformations during fabrication and improve the quality of finished parts. A publication based on the proposed invention is:

F.L. Litvin, A. Nava, Q. Fan and A. Fuentes, New geometry of face worm gear drives with conical and cylindrical worms: generation, simulation of meshing, and stress analysis, *Comput. Methods Appl. Mech. Engrg.* 191 (2002) 3035–3054.

Professor Litvin is Distinguished Professor Emeritus and Director, Gear Research Center, at the University of Illinois at Chicago.