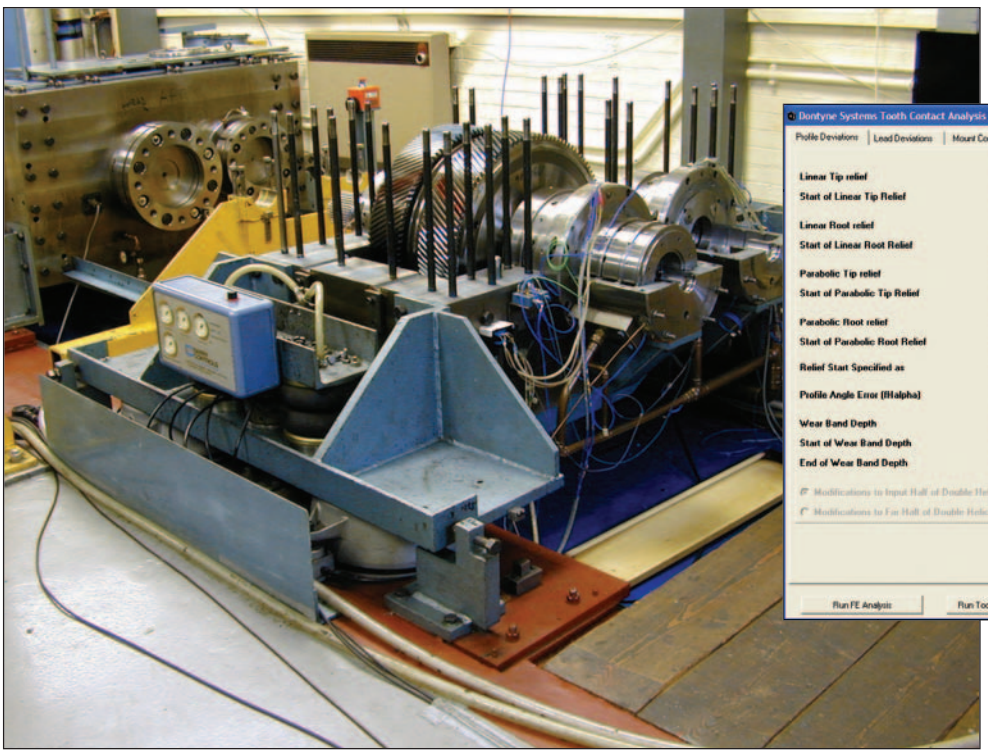
Dontyne

DEBUTS GATES SOFTWARE FOR ITS GEAR PRODUCTION SUITE



Research efforts between Dontyne and the Design Unit include noise and vibration studies seen here.

Dontyne Systems, a U.K. company founded by Michael Fish and David Palmer, recently unveiled a new software program for its Gear Production Suite. *Gear Analysis for Transmission Error and Stress* (*GATES*) is a program for the calculation of stress and transmission error conditions in loaded gear systems.

Based on the *DU-GATES* 3D FE package from the Design Unit at Newcastle University, U.K., the program allows users to achieve reductions in gear noise. Dontyne Systems has compiled more than 10 years of research and noise and vibration studies on single- and double-helical gears to compile its data.

"The *GATES* analysis addresses an important need in the industry," says Fish, managing director, Dontyne Systems Ltd. "Specific instances are marine applications and wind turbines where such a punishing environment could benefit greatly from an application to minimize potential vibration."

According to Fish, recent revisions to ISO 6336 (the calculation of load capacity of spur and helical gears) have significantly improved the validity of this gear rating standard. However, limitations do still exist. It does not optimize tip and root relief or helix corrections, the so-called 'micro-geometry' of the gear. Correctly designed gears can reduce noise and vibration, minimize local contact stresses, increase scuffing resistance and help minimize mesh losses.

The goal of Dontyne Systems is to maximize power density, reduce manufacturing and plant operating costs and reduce noise and environmental impact of their products.

The *GATES* program itself examines a gear set during operation. The graphic and reporting features offer a quick interpretation of the results for customer reports. Links to inspection equipment permit data to be adopted, thus improving the accuracy of the model. This function also enables existing components to be optimized. Basic operating features include surface definition and thin-strip analysis. Advanced features include 3D analysis and definition of shaft and bearing conditions.

While Fish states the program does not in fact design a quiet gearbox, application of the gear-optimizing software can ensure a quieter running of the gearbox across the design range compared to using non-optimized gears. Proven application of *GATES*

continued

has seen up to 16 dB noise reduction.

Recently, *GATES* has been implemented by several U.K. gear design and manufacturing institutions, and used in an extensive range of marine, industrial and automotive applications. "The demonstration version of the program has been received by the current users who have commented on the ease of use," says Fish. Tooth contact analysis as well as complex results can be easily visualized thanks in part to a user-friendly interface that interprets the data. Fish believes the calculation speed will significantly improve in future releases. He also believes *GATES* is an excellent teaching tool for both the experienced gear designer and the novice.

Fish believes the collaboration between Dontyne Systems and the Design Unit at Newcastle University, U.K. has been beneficial to the entire process, though there's still work to be done. "There is the possibility to extend the analysis capabilities to greater range of gear forms in the coming years with appropriate test programs out to validate the calculations," says Fish. "We would welcome collaboration with the industry on the subject."

For more information:

Dontyne Systems
1 Simonside
Prudhoe, Northumberland NE42 6LJ
England
Phone: + (44) 1661 833 828
Internet: *www.dontynesystems.com*
E-mail: *uk@dontynesystems.co.uk*

Gleason

DEBUTS OPTI-CUT TOOLS FOR GASHING, SHAPING AND HOBBING

A new family of cutting tools was recently introduced by the Gleason Corporation for the gashing, shaping and hobbing of gears. This new line is targeted for larger gears, particularly for the wind energy, truck, tractor and power generation markets.

"Our new line of Opti-Cut cutting tools perfectly complements our machine products by extending our capabilities to provide a complete solution to our customers' gear processing needs," says Robert Phillips, senior vice president of Gleason's Tooling Products Group.

The cutting tools were recently exhibited at Gear Expo in Detroit as