Therefore, although the use of an eddy current dynamometer is new to gear test rigs, it has proved to be extremely suitable for this application. Indeed, it offers a number of advantages over existing techniques. For example, the use of the variac allows fine control of voltage and, hence, torque. Also, since the torque can be varied easily during running this means that:

(a) the tests can begin at very low torques to prevent damage to the gear teeth during start up and subsequently the torque can be wound up to the desired test level and

(b) any variable loading situation can be simulated by varying the current to the stator coils.

The latter is regarded as a considerable advantage and something that is not possible with existing test methods. To simulate real life loading on the gearwheel the current to the stator could be varied in a simple manner (for example, logic circuit) or in a more sophisticated system, a microcomputer with a suitable interface could provide any programmed input to a driver that would control the coil current.

Conclusions

An eddy current dynamometer provides an excellent means of testing plastic gear wheels and there is the possibility of extending the method to metal gears. The principal advantages are:

(a) the torque level is infinitely variable and can be accurately measured down to low values,

(b) the torque level can be adjusted at any stage during start up or running of the test, and

(c) it is a relatively simple matter to simulate real life variable load situations.

References


Erratum

We goofed! The May and July issues have the same page numbers. We apologize for any inconvenience this error may cause. The July issue should run from pages 221 through 284.