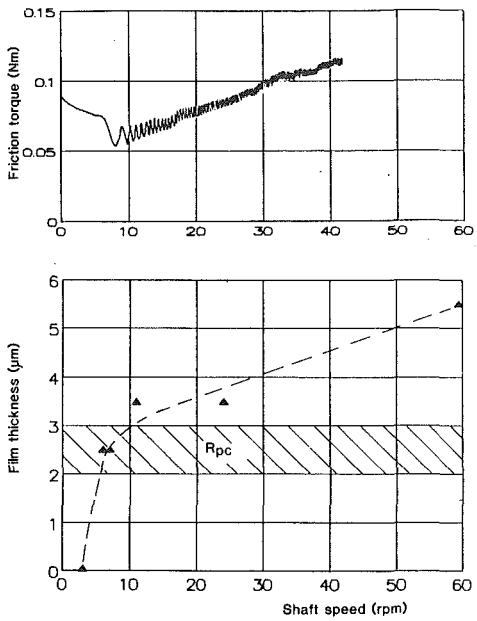

Fig. 13 Minimum film thickness, combined roughness R_{pc} of shaft and seal and friction torque versus speed

compete with the fluorescent technique. The disadvantage in the present configuration is the fact that the complex axial profile of the lubricant film cannot be recorded simultaneously but only by axial displacement of the transducers.This would demand further miniaturization. On the other hand, there are the following advantages:

- The input and output signal are transmitted by the same device (no separate optics for ingoing and outcoming light).
- High resolution over a wide range of film thickness.
- The seal counterface keeps its original surface microgeometry (no optical transparency required).

Initial measurements have already given important information about the behaviour of the lubricant film under a radial rotary seal lip. Moreover, experimental measurements compared well to theoretical predictions of part I (Gabelli et al., 1990).

Extended measurements with a variation of various parameters are in progress, to provide a deeper insight into the mechanisms governing the lubrication of rotary lip seals.

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DISCUSSION

A. O. Lebeck[1]

The authors are to be congratulated for contributing a new method of film thickness measurement. This technique has already been proven valuable for measuring lip seal film thickness and may well be applied to several other tribological situations.

In their various optical studies have the authors observed cavitation streaks in the lip seal fluid film such as have been observed by Nau in mechanical face seals? How would magnetic resistance fluid film thickness measurement respond to such cavitation, either as stationary with respect to the magnet or moving tangentically with the fluid? Have dynamic fluctuations of output been observed? Can one distinguish between output caused by cavitation from signal noise?

[1]Mechanical Seal Technology, Inc., Albuquerque, NM 87109.