criteria. Both data show good agreement in trend and magnitude.

Acknowledgments

This study is supported by the U.S. Department of Energy, Energy Conversion Technology Utilization Program (ECUT), U.S. National Science Foundation, and the George W. Woodruff School of Mechanical Engineering of Georgia Institute of Technology.

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DISCUSSION

A. W. J. de Gee[1]

This is a very interesting paper, which provides strong evidence that the thermal stress parameter, as defined by the authors, in combination with the von Mises yield criterion may indeed provide a reliable estimate of the scuffing load in boundary lubricated sliding contacts between hard materials.

Additional evidence can be found in the following:

Since publishing our paper in *Wear* 1974, transition diagram measurements have been performed with numerous lubricants and additives. The majority of these tests was performed at a sliding speed v, appreciably above 1.5 m/s, meaning that boundary lubrication conditions did not occur (this lubrication condition applies in the regime between the two solid lines or between the two dashed lines in Fig. 6 of the paper; it is usually called "regime II").

Still data on load carrying capacities F_k in regime II for steel AISI 52100 couples, lubricated with different lubricants, are available de Gee et al. (1987).

Figure 11 shows such F_k values as a function of the maximum values of the coefficient of friction f, measured in regime II, designated f^*. A typical coefficient of friction f versus time t

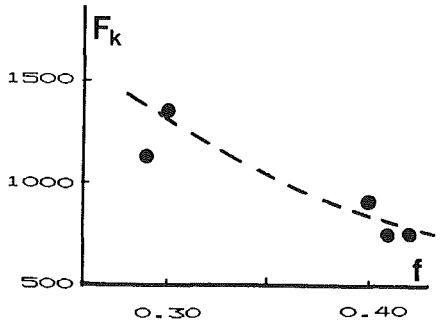

Fig. 11 Load carrying capacity F_k for lubrication regime II ("II-III transition") for five different lubricants de Gee (1987) as a function of maximum value of the coefficient of friction (f^*) in regime II (see Fig. 12 for definition of f^*).

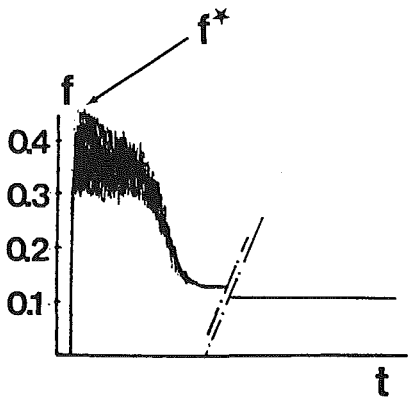

Fig. 12 Characteristic coefficient of friction f versus time t tracing in regime II (schematic), with definition of f^*. The decrease in f is due to the formation of the iron oxide Fe_3O_4 on the contacting surfaces.

tracing is shown in Fig. 12. Note that in de Gee et al. (1987) the average f values, measured during the high friction period, were given rather than f^*.

Applying equations (17) and (18) of the paper, it can be calculated that for the data points, shown in Fig. 11, the Gt values range from 0.89 to 1.04, with an average value of 0.95.

Using the data from Fig. 8 for $Gt = 0.95$, interpolating for different f-values and applying equation (19) yields the dashed curve in Fig. 11, which shows the relation between F_k and f, according to theory.

It can be concluded that the agreement between this curve and the experimental points is excellent.

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[1]University of Technology, Delft, The Netherlands.