

SUMMARY OF THE MEETING

The International Research Group on Wear of Engineering Materials (IRG-OECD) had its 25th meeting 13-14th June, 2005 in the Ångström Laboratory in Uppsala, Sweden. A total of 27 papers were presented during the two days meeting to a large audience with delegates from 17 different countries. Topics such as adhesion, tribochemistry, low and high friction, galling, abrasion-corrosion, surface texturing, roughness, surface structures, coatings, nano wear, micro friction and a data-base for DLC coatings were discussed. The tribological applications of polishing, drilling, wheel/rail contacts, hydraulic devices, diesel engines and human skin were reported. The meeting was chaired by the IRG-OECD Group chairman professor Kenneth Holmberg. The Scientific Secretary professor Bo Jacobsson was thanked for his excellent contribution to the group. Professor Amilcar Ramalho from the University of Coimbra in Portugal, was elected his successor. Host for the meeting was professor Sture Hogmark from Uppsala University.

IRG - OECD GROUP SUGGESTS "BOWDEN" AS NEW WEAR RATE UNIT

The IRG-OECD Group expressed its concern about the large and confusing variation in the expressions for wear in use in tribology publications and the shortcomings in describing experimental conditions. The Group decided to recommend the introduction of a new unit for wear rate: Bowden (B) equal to $10^{-6} \cdot \text{mm}^3 / (\text{N} \cdot \text{m})$. The IRG-OECD Group also decided to approach the tribology journals with a recommended minimum list of parameters to be used when reporting experimental results.

The meeting discussed the quality of reporting experimental results and especially the expression of wear and specifying experimental conditions. The coefficient of friction is a good and uniform expression for friction but a similar good parameter for wear does not exist. Wear is today expressed in many different forms and with different terms such as wear rate, wear coefficient, wear factor, wear volume, wear depth etc. This makes it difficult to compare the wear results reported by different authors in the literature and to take full advantage of their results. Even the much used wear rate is given with units in different forms and with different exponents of ten.

The meeting agreed that it would be an advantage to take into use a new unit, Bowden (B) for the wear rate. The suggested unit, Bowden, is equal to $10^{-6} \cdot \text{mm}^3 / (\text{N} \cdot \text{m})$, and thus correlates with the Archards wear equation and also the expression for wear rate earlier recommended by e.g. Horst Czichos from BAM in Berlin. The new unit would be more clear and illustrative for understanding the levels of severity of wear when comparing different tribological contacts. The wear rate of one B is then a quite frequently appearing "normal" level of wear while 100 B means high wear and 0.01 B would correlate to low wear.

It is well known that the wear rate may vary over several orders of magnitude. This can easily be expressed and understood with the new unit as kiloBowden (kB) or megaBowden (MB) or on the other hand as milliBowden (mB) or microBowden (μB). NanoBowden would be a real challenge to achieve.

The IRG-OECD Group suggests that the new unit for wear rate is tried out by its members and it is recommended to be used by all authors as the expression for wear rate at the next meeting of the group in October 2006 in Lyon, France. At the same time the group realises that this expression can be used only for perhaps some 70-80 % of all wear reporting. Still there are wear cases where other expressions are motivated to be used, such as using wear volume for erosive wear, wear depth when tolerances of components are critical and endurance life for fatigue wear.

The Group also decided to produce a minimum list of characteristic parameters with which a tribological contact can be described. Today there are shortcomings in the descriptions of experimental conditions by neglecting to report parameters such as description of the countersurface, reporting the surface roughness of the contacting surfaces, reporting observed wear products etc. This list will be worked out based on the discussion at the meeting by a smaller group and then sent as a recommendation to the tribology journals. The suggestion is that the list will be used as a check list especially by the referees of the tribology journals.

Meeting summary written down by Kenneth Holmberg/17.6.2005

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