The South African Institute of Tribology

understanding friction, lubrication and wear

SAIT Newsletter 2/2017

TRIBOLOGY – term first used in 1966

Tribology, the term, was mentioned for the first time in 1966 in the Jost Report, a study commissioned by the British government to investigate damage from wear. The committee, headed by Peter Jost, estimated that application of basic principles of tribology could save the UK economy approx. £515 million per annum. (Please visit http://www.tribonet.org/tribology-history/)

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ETT – Essential Tribology Terminology

We continue to demystify the language of tribology in small slices

- ✓ **Additive -** A substance added to a petroleum product with the object of improving one or more of its properties or performance characteristics.
- ✓ **Alkalinity -** See Base Number and Total Base Number
- ✓ **Base Number** The amount of acid required to neutralize all or part of a lubricant's basicity, expressed as potassium hydroxide (KOH) equivalents.
- ✓ **Total Base Number (TBN)** The quantity of acid, expressed in terms of the equivalent number of milligrams of potassium hydroxide that is required to neutralize all basic constituents present in a 1g sample. TBN is the quantity of hydrochloric (ASTM D974) or perchloric (ASTM D2896) acid expressed in milligrams of KOH equivalent that is required to neutralize all the basic constituents of a one-gram sample of a petroleum product. This property is used to indicate the capacity of an oil to counter the corrosive effects of acidic products of combustion.

SAIT TRAINING – A path to power

"LUBRICATION ENGINEERING"

- Five-day course - 5 CPD credits

Course Objectives: This is designed to transfer a thorough understanding of tribology from a lubrication engineering perspective. Over 20 topics take participants through basic chemistry to the theory of rubbing contact and friction in all industrial applications including the application of management principles, safety and the environment in tribology.

24-28 July Johannesburg – 2017
21-25 August Cape Town
16-20 October Johannesburg

For more information and to register for training please Ctrl + Click
http://www.sait.org.za/events/training

TRAVEL – 2017/2018 International Events!

Sept 17-22	6th World Tribology Congress – Beijing China
Nov 15-16	4th ICIS & ELGI Industrial Lubricants Conference – Vienna Austria
Oct 31–Nov 2	6th African Base Oils and Lubricants Conference - Ghana
Jan, 9-11, 2018	21st International Colloquium Tribology, Industrial and Automotive Lubrication Germany/Stuttgart, EU

It's all about asperities!

In 1950 Philip Bowden and David Tabor gave a physical explanation for the laws of friction. They determined that the true area of contact is a very small percentage of the apparent contact area. True contact area is formed by the ***asperities***.

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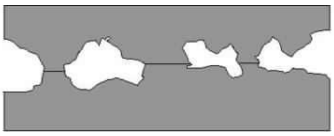

Asperity, defined as "unevenness of surface, roughness, ruggedness" (OED, from the Latin *asper* — "rough"), Smooth surfaces, even those polished to a mirror finish, are not truly smooth on an atomic scale. They are rough, with sharp, rough or rugged projections, termed "asperities". **https://en.wikipedia.org/wiki/Asperity_(materials_science)**

New SAIT President – Dave Gamble

I would like to thank the SAIT Executive Committee for the honour of electing me to preside as President for 2017/2018. The Committee has already met to review and revise our Constitution, agree and set our future SAIT strategy.

- We have seen a falloff in attendance at our meetings, seminars and technical evenings. On the other hand, the recent introduction of Webinar sessions saw an increase in participation. We will expand the use of this type of modern media communication to further participation and interest growth in the SAIT.
- I appeal to all members to read our newsletters and return to supporting all our events – we must expand our membership.

We will communicate our findings and our revised strategic plans.

Call for papers

Engine technology and lubricant specifications are changing rapidly along with changes in base oil quality. Awareness in this area is of critical importance to ensure that products are formulated cost effectively and that engines operate with correct lubricants to avoid premature failure.

We would like to see presentation from End-users, Lubricant marketers / manufacturers, OEM's additive companies and related industries.

If you are interested in presenting / taking part please send a brief synopsis, and short title of your proposed presentation or case study for approval, maximum 500 words, to the SAIT, email secretary@sait.org.za, admin@sait.org.za or fax to 086 719-2261 as soon as possible. We would like to circulate the programme to a large target market to ensure a good attendance. Please include title, authors and affiliation, and your contact details.

DID YOU KNOW? – 'A tribological tip-trip'

The ability of gear-oil to support a load decreases with temperature increases due to a thinning effect that temperature impacts on viscosity. But each oil has a different rate of change expressed in an oil's **Viscosity Index (VI) number** – the higher the VI number, the lower is the rate of change.

What is grease?

A grease is defined as: *'A solid or semi-solid product of the dispersion of a thickening agent in a liquid lubricant. Other ingredients imparting special properties may be included'*

The word 'grease' originates from the Latin word 'crassus' meaning fat, since simple animal fats were probably the earliest known examples of lubricants and were used to

lubricate the axles of chariot wheels by the Egyptians some 3,500 years ago. Right up until the Industrial Revolution mechanisms were still being lubricated with vegetable oils and animal fats, but in the 19th century rapid developments in engineering developed a need for more sophisticated lubricants. Included in these lubricants, which were making increasing use of the newly discovered petroleum and its associated by-products, were the first of the modern greases. (United Kingdom Lubricants Association – www.ukla.org.uk)

TOPICS – please!

We are looking for presenters to conduct technical webinars on topics of interest to

our members – please submit names and a brief overview

FEEDBACK – please!

To ensure that the SAIT is serving your needs we would like to encourage all members to make proposals / suggestions as to what you like, dislike and proposed changes that you would like to see.

- What topics would you like to see being presented or discussed?
- Topics for Webinars

This is for you – we would appreciate your assistance. E-mail admin@sait.org.sa