

# SAIT Newsletter, June 2019

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## **Tribology needs constant explanation and faces the challenge of relegation as a minor issue in today's world of climate change and global warming.**

It is worth repeating that **Tribology** is the science and engineering of interacting surfaces in relative motion. It includes the study and application of the principles of *friction, lubrication and wear*.

Tribology is highly interdisciplinary. It draws on many academic fields, including physics, chemistry, materials science, mathematics, biology and engineering.

### **The reduction of friction is a core issue in the global warming equation.**

The word friction comes from the Latin "frictionem", which means rubbing. This term is used to describe all those dissipative phenomena, capable of producing heat and of opposing the relative motion between two surfaces.

The word *tribology* derives from the Greek root τριβ - of the verb τριβω, *tribo*, "I rub" in classic Greek, and the suffix *-logy* from *-λογία, -logia* "study of", "knowledge of". Peter Jost coined the word in 1966, in the eponymous report which highlighted the cost of friction, wear and corrosion to the UK economy

Ref: [Wikipedia](#)

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## **ETT – Essential Tribology Terminology**

### **Three more simple definitions for of tribology's essential terms**

- **SAE** Society of Automobile Engineers
  - **SAE Number** A number indicating the viscosity range of crankcase, transmission, or rear axle lubricants according to the SAE viscosity classification system.
  - **SAPS** Sulphated Ash, Phosphorous, Sulphur – content in engine lubricants that can impact the performance of exhaust after treatment devices.
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## **SAIT Events/...**



## SAIT Events

### SAIT AGM

The SAIT AGM was held at 18:00 on Tuesday evening 14 May 2019 attended by 28 people in total, including a quorum of SAIT Members, their guests and many students from the University of Johannesburg.

The SAIT Executive Committee for 2019/20 was duly elected, consisting of all members of the 2018/19 committee, who welcomed additional member, Samuel Manamela of Bahlaloga

Technologies.

A Technical Meeting followed the AGM, with a presentation by Professor Peter Olubambi of the University of Johannesburg on the subject of "Practical Problems in Tribocorrosion".

### SAIT Annual Awards Dinner

The SAIT Annual Awards Dinner was held in the Kalahari Room at [CedarWoods of Sandton](#). The dinner was well-attended by members of the SAIT Executive Committee Doug Herschell, David Beard and Leon Bradley, and the Engineering Elite of Johannesburg, including Professor Kucukkaragoz and Dr Natasha Sacks of the University of the Witwatersrand, supported by many of their students, Jean-Patrick Leger of Vesconite, and representatives from several of the Corporate Members of SAIT including Flexilube, Total, Astron Energy and BP.



The Annual Awards were presented after dinner:

The prestigious **Louw Alberts Award for 2018** was presented retrospectively **to Doug Herschell**: David Beard made the presentation, explaining that Doug was unable to attend the 2018 Awards Dinner.

*Doug Herschell accepting the Louw Alberts Award from David Beard.*

**Leslie Frank Barker** was the recipient of the **2019 Louw Alberts Award**, for consistently upholding the values of tribology and perseverance in ensuring its survival in the face of great odds within the industry. Through his competence and tenacity, he has promoted this discipline in many areas. As Leslie was unable to attend this event, Doug Herschell accepted the Award on his behalf.

The **Best Technical Presentation Award for 2019** went to **Dr Jean-Patrick Leger of Vesconite** for his presentation "Adventures in Wear: From Underground Gold Mines to Desert Railways to Ocean Floors" at the SAIT Technical Meeting on 15 May 2018.



*Jean-Patrick Leger accepting the Best Technical Presentation Award from SAIT President Doug Herschell*

The **SAIT Student Award for 2019** went to **Thuli Mkhali** for her MSc project "Influence of Ruthenium and Molybdenum Ion Implantation on the Machining Performance of WC-Co Straight Grade Inserts"

*Doug Herschell with SAIT Student Award Winner, Thuli Mkhalihi.*



David Beard ended the evening with a fascinating and entertaining presentation on the Millau Bridge in France.



## SAIT Training

**Follow the path from data to information and into knowledge:**

Please note that our next 5-day course, **Lubrication Engineering 121 in Durban**, has been **POSTPONED**. The new dates for this course will be advised as soon as they are finalised. This is as a result of there not being sufficient delegates registered to make the course viable. If you wish to attend this course, either in July or August, please contact the SAIT as soon as possible. Thank you.

### Lubrication Engineering 120



*Delegates of LE 120 at Cedar Woods with Lecturer, Johan Claasen and SAIT Secretariat Gill Fuller and Berice Fayard*

Lubrication Engineering 120 was held at [CedarWoods of Sandton](#) from 20-24 May 2019 with ten delegates attending, of whom 9 passed. Our congratulations to the successful delegates.

The SAIT Training schedule for the remainder of 2019 is:

LE 121: **Dates to be advised**; Durban  
LE 122: 22 - 26 July 2019, Johannesburg

LE 123: 26 - 30 August 2019, Cape Town  
LE 124: 7 - 11 October 2019, Johannesburg

**Costs: SAIT Members: R16 031 Non-Members: R17 894 Students: R4 922**

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### STLE examinations at SAIT

The South African Institute of Tribology will host three examinations of the Society for Tribologists & Lubrication Engineers (STLE) on **22 November 2019**. The venue is Science Park, Kelvin, and time is from 09:00 to 12:00. **The exams are open to SAIT members in good standing.**

- **Certified Lubrication Specialist (CLS):** Although not compulsory, it is highly recommended that you first attend the SAIT five-day 'Lubrication Engineering' course. A distinction of 75% is a good indication of success in the CLS exam, where the standard is high and the pass mark is 70%. The recommended books for the CLS exam are the STLE Alberta Section 'Basic Handbook of Lubrication' Third Edition, and/or the AIST 'The Lubrication Engineers Manual' Fourth Edition.
- **Oil Monitoring Analyst (OMA I and OMA II)**
- **Certified Metalworking Fluids Specialist (CMFS)**

Recommended reading for all modules is on the [STLE website](#) under "Professional Development".

For further information, costs and to register, please contact Gill, Isabel or Berice at the SAIT offices: Tel. (+27) (0)11 804 3710 or email [secretary@sait.org.za](mailto:secretary@sait.org.za) or [admin@sait.org.za](mailto:admin@sait.org.za).

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## International Events:

**25 to 27 June 2019 – [12<sup>th</sup> International Colloquium Fuels – Conventional and Future Energy for Automobiles](#).** *Colloquium Office:* Werner Schollenberger, email [werner.schollenberger@tae.de](mailto:werner.schollenberger@tae.de); [Registration and Accommodation Service](#) online, or email: [Alexandra.fisch@tae.de](mailto:Alexandra.fisch@tae.de); *Venue:* Technische Akademie Esslingen e.V., an der Akademie 5, 3760 Ostfildern.

**In January 2020 the [22<sup>nd</sup> International Colloquium Tribology](#)** will take place at the Technische Akademie Esslingen. The conference provides an international exchange forum for the industry and the academia. Leading university researchers present their latest findings, and representatives of the industry inspire scientists to develop new solutions. Discussions and co-operations enable attendees to meet current tribological challenges.

One of the main topics is the forthcoming e-mobility technology, its various aspects and its consequences for the lubrication and tribology community. Abstracts can be submitted via [this website](#). The closing date for the submission is **31 May 2019**.

## Colours for Africa

**Colours for Africa** - colour coding and marking are one of the simplest ways to track matching components and maintenance activities. Using colour works for Africa. An excellent example is inspecting for any changes in fastening systems where **friction torque** plays a vital role.

- **Friction torque** is the **torque** caused by the **frictional** force that occurs when two objects in contact move. Like all torques, it is a rotational force which may be measured in Newton metres (Nm) or pounds-feet (lbs/ft)

Bolts and nuts, or screws are often designed to be fastened with a given amount of torque, where the friction is adequate during use or operation for the bolt, nut or screw to remain safely fastened. This is true with such applications as lug nuts retaining wheels to vehicles, or equipment subjected to vibration with sufficiently well attached bolts, nuts or screws to prevent the vibration from shaking them loose. **Vibration is a destroyer.**

Manually checking friction torque accuracy on safety-critical fastening systems with a calibrated torque wrench is a slow, exhausting process. **Once the specified torque has been applied a fastening nut should not come loose and can be colour-marked as aligned with the lug.** At the next inspection a technician must only visually-check that the brightly coloured mark is aligned on every nut and bolt. Any movement in the marker alignment means only that fastener needs re-torque attention instead of retightening everything. Productivity and safety hugely benefit from this system and procedure.

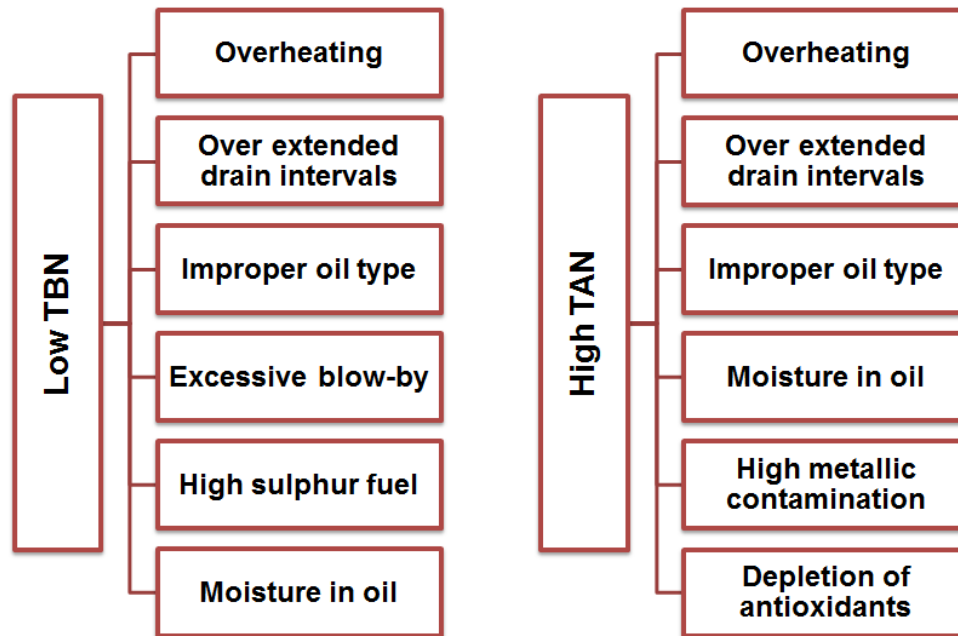
Ref: *Bulk Handling Today* March 2019 Page 41 & online at [About Bearings](#).

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## A WORTHWHILE STANDARD OPERATING PROCEDURE

In assessing lube depletion rates, it makes sense to track both TBN (Total Base Number) and TAN (Total Acid Number)? Here is a summary view of the contributors to low TBN and high TAN.

Thanks to Steven Lumley, Wearcheck Technical Manager, for the following input chart.



## PARTING SHOT

### Did You Know?

Out there in the mining industry are people that have designed stunning tribological achievements in materials handling. Such a person is Werner Baller – founder and CEO of South African based WEBA Chute Systems, a leading global producer of customised bulk material transfer chutes serving hundreds of clients in more than 15 countries worldwide. Baller has been entered into the [‘International Mining Technology Hall of Fame’](#).

Please visit the website, and consider Werner Baller’s achievements from a tribological viewpoint.

Please Like The South African Institute of Tribology - SAIT - on [Facebook](#), and regularly check our [Website](#) for updates.