



## SAIT Newsletter, September 2020



For more Doug Herschell tributes from SAIT Members, go to [the SAIT Official Blog](#)

### Tribology

**Tribology** is the study of friction – **not** the complete elimination of friction. The footprint of a tyre on the road is an excellent example of friction as a balanced necessity. It is friction that allows vehicles to steer and wheels to slow down in contact with the road after frictional forces have been introduced into brake surface areas.

ABS (Anti-Lock Brakes) on most modern cars are designed to prevent wheel lockup in emergency braking. The moment a wheel locks up the tyre footprint loses frictional contact with the road surface – in releasing the lockup, ABS reintroduces essential frictional contact between rubber and road which in turn allows the driver to steer away from a hazard while still slowing down.

Gravity, lurking in the background, is the unseen factor we take for granted. Friction is dependent on gravity, to which we must add air-pressure. If we accept that 'friction is the force that takes place when two or more objects come together and at least one is in motion', then the study of friction in space travel becomes very complex – gravity is minimised and the object is operating in a vacuum.



Here's some fuel for the debate: *'Friction consists of two types: kinetic and static. Kinetic friction involves movement, and static involves no movement. Static friction consists of two objects which have a large enough force to resist sliding. An example of static friction involves a computer on a desk. Kinetic friction consists of two objects moving relative to each other, like a sled on snow.'*

Please visit <https://sciencing.com/difference-between-gravity-friction-8634657.html>

## The 'W' in Viscosity on a Can of Oil



Winter in South Africa (with kudu)

The 'W' on a motor oil container stands for winter. The first number in oil multigrade classification refers to a cold weather viscosity. The lower this number is, the less viscous oil will be at low temperatures. For example, a 5W-xx motor oil flows better at lower temperatures than a 15W-xx motor oil.

A multigrade oil does not require changing according to the seasons. A multigrade 'W' oil is not as affected by temperature in the same way as a monograde oil. Winter temperatures in Southern Africa are challenging for lubricants – in a single day the morning can record plus 8°C in Durban and minus 8°C in Bloemfontein. A cold start is where engine wear takes place and is exaggerated by poor lubricant flow.



Now comes the moment of truth. Does the multi-grade content of an oil container match the viscosity range claimed and printed on the outside as a product specification?

## SAIT Training

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

*Lubrication Engineering*

**All of our courses, online and 'live', are registered with ECSA and are awarded 4 CPD Credits.**

**Information applicable to all courses held by The SAIT:**

**Course Objectives:** The course is designed to transfer a thorough understanding of tribology from a lubrication engineering perspective. Some twenty topics take participants through from basic chemistry; the theory of rubbing contact and friction in industrial applications, to the application of management principles, safety and the environment.

**Who Should Attend?** The course is aimed at maintenance personnel but will be of benefit to anyone concerned with the operation, maintenance, condition monitoring or management of industrial plant, machinery, transport and other lubricant related disciplines. Marketing personnel can gain valuable knowledge from the course.

**Experience:** Delegates are advised that it is essential that they should have a good understanding of lubricants and their application, specifically what viscosity is. Delegates must have at least twelve months experience in the lubricant and maintenance professions.

**Case Studies:** Delegates are invited to bring their case studies, their problems and their questions to the course for discussion.

**Course Content:** Lubrication Terminology, Fundamentals of lubrication, Production and characteristics of lubricant base oils, Properties of base oils, Additives, Specifications, Grease, Lubrication Devices, Synthetic Lubricants, Internal Combustion Engine Lubrication, Auto Drive Line Lubricants, Plain Bearings, Rolling Bearings, Gears, Hydraulics, Compressors, Transformer Oils, Metal working, Filtration, Condition monitoring & Used Oil Analysis, Seals, Coolants, assessment of failed components, Lubrication Surveys, Storage and Handling of Lubricants and Environment.

**Examination:** An on-line examination will complete the course, with a certificate for successful candidates.



## Next e-Learning Course with the SAIT “LUBRICATION ENGINEERING 127e” e-learning

**5-8 October and 12-16 October 2020**

- The course will be held over two weeks, mornings only.
- First week Monday to Thursday, second week Monday to Friday.
- It will be conducted electronically, with lecturers covering the different topics. Access to data, computer with speaker and microphone is essential

*Registration closes a week before the starting date of each course; please book early to ensure your position.*

*Please note that photographs will be taken during the course and published in the SAIT Newsletter and on the SAIT Website.*

*To download the Registration Form, go to our Website at [SAIT Training](#).*

<b>e-Learning Costs:</b>		
<b>SAIT Members:</b> R11,385.00	<b>Non-Members:</b> R12,765.00	<b>Students:</b> R3,510.00 <i>(proof of registration as a full-time student must be supplied with registration form)</i>

## ‘Live’ courses

Face-to-face ‘live’ training will resume when Lockdown Regulations permit; a course is scheduled for February 2021 as follows, but is **subject to confirmation, date to be advised:**

- **LE 131:** February 2021, dates and venue to be advised.

<b>‘Live’ Course Costs:</b>		
<b>SAIT Members:</b> R17,135.00	<b>Non-Members:</b> R19,090.00	<b>Students:</b> R5 267 <i>(proof of registration as a full-time student must be supplied with registration form)</i>

For full details and to download Lubrication Engineering Registration Forms, go to [SAIT: Training](#)



## The STLE's CLS, OMA and CMFS Examinations Hosted by The SAIT



The South African Institute of Tribology will host the STLE's CLS, OMA I and OMA II and CMFS examinations on **20 November 2020**. The venue will be Science Park, Kelvin.

- **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)**

**A significant amount of study is required for these exams, so it is advisable that candidates make an early start.** 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).

## SAIT Events

**SAIT AGM, 2020:** The SAIT's 36<sup>th</sup> Annual General Meeting was held successfully on Tuesday evening 5 August at 17:00 on Zoom, with a quorum of members in attendance.

**The 2020/21 SAIT Executive Committee Members** were confirmed as follows, after earlier receipt of the required nominations:

**Patrick Swan, SAIT President; Johan Claasen, SAIT Vice President;  
David Beard; Howard Benadé; Leon Bradley; Eben du Plessis; Dave Gamble;  
Sam Manamela; and Faiz Regal**

A summarised report-back is available on the [SAIT Website](#), on the [SAIT AGM](#) page.

**SAIT Membership Fees:** A reminder that SAIT Membership Fees for 2020/21 are overdue; relevant invoices were emailed in early April. We understand that the lockdown has caused financial difficulties, but will appreciate it if those Members who can do so pay their membership fees as soon as they are able, and let us have Proof of Payment by email at [admin@sait.org.za](mailto:admin@sait.org.za). If you are unable to pay at this time, please contact Gill Fuller at [secretary@sait.org.za](mailto:secretary@sait.org.za) to arrange for continuation of your membership. Our thanks to those members who have paid their 2020/21 membership fees.

*We will keep you informed of all updates and changes to our schedule.*

## International Events

**For a full list** of upcoming international events please visit [Tribonet Conferences](#) where links take you to each event in full detail. For news on the Plenary Speakers and important dates, please read on.



Every Wednesday, a new recorded webinar is available for free to all STLE Members. We also provide links to TLT articles related to the webinar

topic. For more information, please go to:

[https://www.stle.org/WebinarWednesdays?utm\\_source=Real%20Magnet&utm\\_medium=email&utm\\_campaign=156033357](https://www.stle.org/WebinarWednesdays?utm_source=Real%20Magnet&utm_medium=email&utm_campaign=156033357)

For full information about the **7<sup>th</sup> World Tribology Congress**, to be held in Lyon, France, from September 5 to 10, 2021, please visit [WTC2021](#).

For further information on Speakers, Events and Important Dates for WTC2021, please read on.

Visit the [Speakers Page](#)

**The Congress Program:** A very rich and intense program which includes:

- > Young Tribologists Events: 3-Minute Thesis Contest, Career Fair, Evening
- > Sponsor Lectures, 40 Invited Talks, 17 blocks of Standard Sessions
- > Poster Sessions, Exhibition
- > Social Program: Welcome drink, Live show and party, Conference Gala Dinner

Visit the [Program Overview Page](#)

**Any contribution is welcome until 15 October 2020** through the [submission platform](#) and will be reviewed by the scientific committee. Acceptance will be notified by e-mail **by end of January 2021**. Selected papers will have the opportunity to be published in the peer-review journals partners of the conference, which are referenced on the [conference website](#).

## Important Dates:

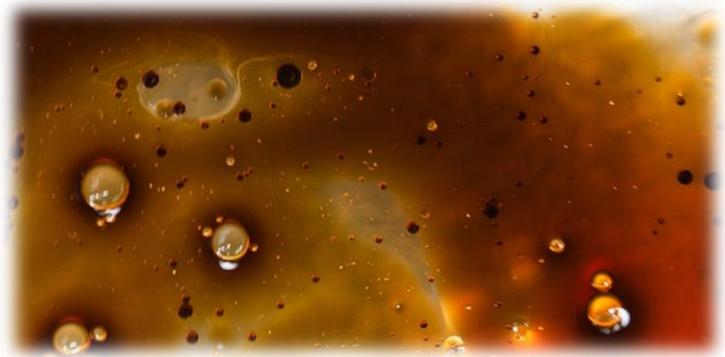
**Abstract Submission:**  
Opening: **30 March 2020**  
Closing: **15 October 2020**

**Early-Bird Registration:**  
Opening: **15 September 2020**  
Closing: **15 April 2021**

## Contamination Corner

**Contamination** is all too often the result of deliberate action arising from ignorance. And when it comes to grease the right approach is 'less is more'. Over-greasing bearings or bearing housings causes blown seals which in turn lead to loss of lubricant, overheating and mechanical failure.

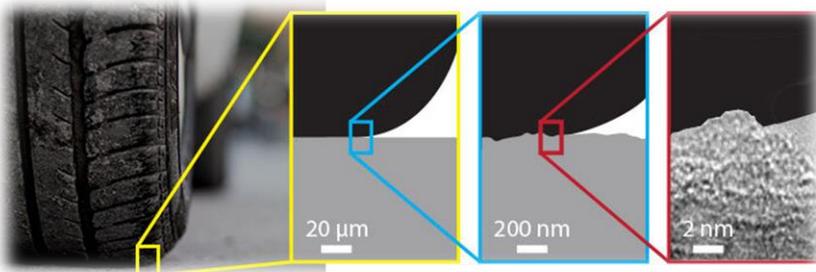
Apart from safety concerns, over-greasing is also an environmental polluter. Over-pressurisation can be prevented by a pressure-relief fitting which will relieve and discharge grease when the correct internal pressure is obtained. These are commercially available from several suppliers such as grease fitting manufacturers. Bearing and seal manufacturers can recommend the maximum pressure level in order to obtain the proper relief setting.



## Did You Know?

**Did you know that** software is available for simulation of the most common Tribological contacts – a contact of two surfaces in a sliding motion. Besides the macro geometry, surfaces can have microgeometry or nanogeometry

(roughness). The contact may also be lubricated or dry. Here are examples of problems that can be solved with Tribology simulation:



Nominally smooth hydrodynamic simulation, nominally smooth and rough contact simulation (pressure and subsurface stress calculations, deflections), Stribeck Curve simulation (calculation of friction in mixed lubricated contacts), calculation of contact temperatures in solids, wear and wear particles simulation and surface roughness evolution, tribofilm generation.

Please visit <https://www.tribonet.org/cmdownloads/tribology-simulator/>

## From the President's Desk – Patrick G. Swan

Shortly before our 36th AGM, our previous president, Doug Herschell, died after a long battle with cancer. Doug's lifelong passion for tribology and particularly lubrication and lubricants has left the SAIT in good shape.

As the science of friction and wear, Tribology is able to reduce the total cost of ownership to industry, both through energy savings and through extended equipment life and productivity.

The SAIT mission is

- ***Promoting technology transfer whereby local Tribological problems can be solved, and products improved***

Since inception the SAIT has offered training courses to promote Tribology through the transfer of knowledge. Our courses are highly respected and earn learners maximum CPD points where applicable. We have now broadened our training by offering the courses online. The first Zoom Lubrication Engineering course was run in August, which produced very positive comments, such as

- ✓ Done very professionally and with a high standard
- ✓ Overall a very good course and extremely satisfied

To help students better absorb the challenging contents of the 5-day Lubrication Engineering course, the online version will be run over 2 weeks, with lectures only in the mornings. Our next course is to be run from 5 to 16 October 2020.

To encourage overall problem solving and information transfer to all of our members, with a specific focus on younger members, Howard Benadé, one of our committee, has formed a Young Tribologists Group. The main aim of this group is to serve as a support network for young Tribologists. We look forward to seeing this group flourish, where the older, more experienced members can contribute as mentors to the younger generations.

Every 4 years the global governing body for Tribology, the International Tribology Council, holds an International Congress, called the World Tribology Congress, or WTC. The WTC meetings run for 6 days and are very well attended, drawing the cream of the Tribology world. The last meeting, WTC 2017 in China, was attended by more than 2000 delegates. The next, WTC 2021, will be in Lyon, France, next year when the ITC has asked the SAIT to



bid to host WTC 2025 in Cape Town. We are working hard on a bid, and if it is accepted next year at the Lyon meeting this will be the first WTC to be held in the Southern Hemisphere.

(For full information about the **7<sup>th</sup> World Tribology Congress**, to be held in Lyon, France, from September 5 to 10, 2021, please visit [WTC2021](http://WTC2021).)



## Parting Shot!

### It all starts with a Tribology Policy!

Policy is a missing element in lubrication operations for many automotive and industrial applications. Procedures – particularly standard operating procedures or SOP's – are derived from written policies which in turn leads to systemic discipline and an entrenched culture of the 'way we do things around here'. A disciplined approach to lubrication is a massive aid to assistance to effective training. Training is all about how to operate while comprehensive policies and procedures establish the 'what and why' for training to use. The more disciplined we are in terms of tribology policies and procedures the less training we need. On the other hand, training cannot solve the absence of policies and procedures.

## We Want to Hear from YOU



1. Please let us know what topics are of interest to you: submit interesting paragraphs or articles that we can share with the SAIT community, by sending them to [admin@sait.org.za](mailto:admin@sait.org.za), for forwarding to The Editor. This will assist in disseminating information to all involved in Tribology.
2. Please let us know what would interest you for technical sessions or webinars
3. Please let us know of interesting presenters from whom you would like to hear.

We look forward to hearing from you!

**Please Like the South African Institute of Tribology – SAIT – on [Facebook](#) and regularly check our [Website](#) for updates.**