

SAIT Newsletter, June 2020

Tribology

Tribology is inexorably connected to the future of the Earth. Tribology can wield an extensive benefit on this blue speck planet that circles a dwarf sun situated in the outer suburbs of the Milky Way Galaxy. However, for tribology to exert a macro effect on the environment and world economies tribology must be driven from a strategic and policy-driven standpoint. That's what is missing.

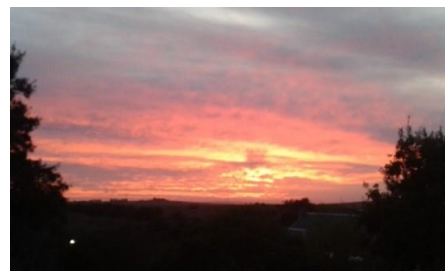
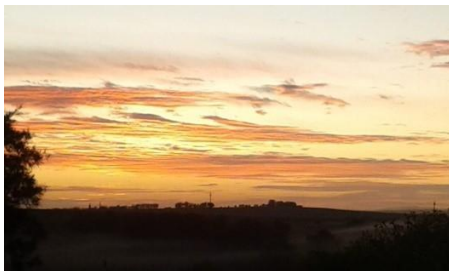
Too many business and political leaders see overcoming friction as an issue for the workshop floor. The drivers of strategy are leadership requirements for vision and action – both of which start with succinct thoughts and words. 'Go Green or Go Home' is an attention-grabbing contribution to the Lubes 'n Greases Magazine Anniversary issue of February 2020.

'Go Green or Go Home' is a strategic comment from Joan Evans, Global Industry Liaison Manager, Infineum USA. Evans makes the point – "The speed of change will vary. For example, light duty is changing significantly faster than heavy duty. Emerging economies are leap-frogging years of technical innovation and demanding new innovative products." Evans continues – "Our industry is going through a metamorphosis. Integration of electrification into the powertrain is a huge technical challenge, resulting in numerous configurations with diverse lubrication needs. Future additive and oil performance areas include electrical conductivity, solubility and heat transfer.'

The clear skies that India and China are enjoying following the COVID-19 shutdown reinforce the strategic imperative for the automotive industry to 'go electric'. How much will COVID-19 cause powertrain electrification to be delayed? We shall have to wait and see.....

Spinning Around

For some few billion years the earth has revolved around its axis. Normally, if in the mechanical world of rotation, this would be a tribological nightmare, but because of course there is no actual physical axis, and with tongue in cheek, and writers licence this has not happened, no wear has apparently taken place, and so perhaps it is the mysterious dark matter which is, unbeknown to humans, lubricating the earth in its constant movement. Quantum physics theories and discussions have certainly not looked at the tribological implication, however elusive that may be.





This constant turning, however, provides us all with the most beautiful and encouraging experiences, like these early dawns, seen from my daughter Galina's Cape front door.

These images, not only morning skies, but any positive image or thought, that can help to cheer us up and defray the stress of current unpleasant images of virus and lockdown, are very important in keeping us all going.

Gill Fuller, SAIT Secretary. May 2020

Root Cause Failure Analysis

Compressors and RCFA (Root Cause Failure Analysis)

Compressors are high-friction machines. The heat developed in a simple hand-pump for inflating a bicycle tyre is evidence of the friction caused by air under pressure. And compressors are major components of modern industrial machinery.

When doing failure analysis and troubleshooting, all findings and conclusions must be supported by data and must conform to science. Because the failure of compressor components is not influenced by the supernatural, there will be logical explanations for everything. Every effect has a cause, and in nearly 100 percent of all failure incidents, a series of small contributing causes successively reduced the component failure margin. **Ultimately several — in themselves small — deviations will combine into one big problem.**

From the book [Compressors: How To Achieve High Reliability And Availability](#) published by McGraw Hill – Author: Heinz P. Bloch & Fred K Geitner

SAIT Training

Follow the path from data to information and into knowledge.

Announcing our first e-Learning Course from 27 – 31 July:

The SAIT is offering an E-Learning Course – Lube Eng 126 e-Learning - to replace LE 126, and LE 127, which were both cancelled due to Lockdown Regulations, and LE 128, as we cannot be certain that gatherings in sufficient numbers will be allowed in July.

This course is scheduled to take place from 27 – 31 July 2020, as an online Zoom course. Anyone previously registered to attend any of these courses, plus anyone else in the industry wishing to participate, can email admin@sait.org.za or secretary@sait.org.za for the registration form.

Delegates who have already paid in full for a course cancelled by us, will receive a refund of the balance owing to them.

The course will be conducted electronically, with lecturers covering the different topics. Delegates are responsible to ensure that they are able to connect to the e-learning platform (ZOOM), with a computer / laptop, with speakers and a microphone, in a venue that will facilitate good learning and have sufficient broadband speed to ensure uninterrupted learning.

For e-Learning courses, a collage of individual photographs will be made and published.

The cost for the e-Learning Course, including VAT, will be:

SAIT Members: R11,385.00

Non-Members: R12,765.00

Students: R3,510.00

Lubrication Engineering Courses, 2020

These courses are registered with ECSA, number to be advised, and are awarded four CPD credits.

Register now to ensure your place on these courses. There is still space available.

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

Please note that group photographs are taken and published.

- **LE 128:** 27 to 31 July 2020, Johannesburg – replaced with e-Learning Course
- **LE 129:** 24 to 28 August 2020, Cape Town
- **LE 130:** 19 to 23 October 2020, Johannesburg.

Costs for 'Live' Courses, including VAT:

SAIT Members: R17,135.00

Non-Members: R19,090.00

Students: R5,267.00

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



Society of Tribologists and Lubrication Engineers

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 or admin@sait.org.za.

SAIT Events

SAIT AGM, 2020: Please note that the 2020 Sait AGM will be held as a live event, in August 2020.

When exact dates and full details are available, these will be emailed to all members.

All members will be invited to attend the AGM, and members in good standing will be able to vote on the matters to be decided.

SAIT Annual Awards Dinner 2020: Cancelled due to Covid19 Pandemic Lockdown.

SAIT Membership Fees: Sait Membership Fees for 2020/21 are due, and 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 will pay their membership fees before the AGM and let us have Proof of Payment by email to admin@sait.org.za as soon as possible. Thank you.

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

International Events

WTC 2021 - 7th World Tribology Congress - 5-10 September 2021 - Lyon, France

We are pleased to announce that the 7th World Tribology Congress (WTC 2021) will be held in Lyon, France, on September 5-10, 2021, following previous WTC events in London (1997), Vienna (2001), Washington DC (2005), Kyoto (2009), Torino (2013) and Beijing (2017). WTC 2021 aims to highlight recent important progress in all aspects of Tribology, strengthen the links between academy and industry ... For further information, please visit www.wtc2021.org.

For a list of upcoming international events please visit <https://www.tribonet.org/conferences/> where links take you to each event in full detail

Contamination Corner

Siloxanes – Really? There is no doubt that you have come across these silicone containing compounds as they play an important behind-the-scenes role in daily life. Siloxanes wash our hands, brush teeth, clean clothes and even print newspapers. Siloxanes are most widely used in the cosmetics industry but are also used in the manufacturing of plastic products and even in the food industry as an oil substitute to create low-kilojoule food products.

Steven Lumley, WearCheck Technical Manager, comments – "When siloxane-containing products are disposed of into anaerobic treatment systems, they volatilise into the biogas. Biogas and landfill gas can contain one or more species of siloxanes depending on the organic feedstock used to produce the gas. When these gases are burned

as fuel in gas engines, deposits of solid silica or silicates will adhere to the cylinder heads, pistons and heat exchanger surfaces, causing a variety of problems.”

*Disciplined application of **RCFA (Root Cause Failure Analysis)** may well lead to siloxanes and not lubrication as the cause of the problem in a bio-gas powered engine. Don't jump to conclusions!*

Siloxanes, often also described as silicones, are molecules with an oxygen–silicon backbone (Si–O–Si) where each Si atom carries two organic groups, mostly methyl, ethyl or phenyl groups.

For in-depth insight please visit <http://www.wearcheck.co.za/shared/TB60.pdf>

Did You Know?



Did you know that during the **Prehistoric Epoch (before 3500 BC)**, the concept of using **friction** to start a fire by rubbing two pieces of wood together was used. This is one of the most primitive ways of producing heat/fire was via friction. Fire can be created through friction by rapidly grinding pieces of solid burnable material (such as wood) against each other or a hard surface. Hand Drill, Two-Man Friction Drill, Fire Plough, Pump Fire Drill, Bow Drill, Fire piston, Flint and Steel are some of the friction fire methods. In this way, primitive men were the first to understand the concept of friction and utilise it to produce fire needed for their daily activities.

*A diorama showing **Homo erectus**, the earliest human species that is known to have controlled fire, from inside the National Museum of*

*Mongolian History in **Ulaanbaatar, Mongolia.** ([Wikipedia](#))*

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

Parting Shot

Covid-19 could cause unexpected corrosion.

[Image originally online - Northern Natal Courier](#)

When machines operate, the lubricant is circulated and ‘splashes’ around inside the machine. This provides some level of corrosion protection. When a machine stands, machine elements above the lubricant level, are exposed to water vapour, and not protected for a long while. This will cause corrosion and can result in machine failure after start-up. This can be prevented with the use of VCI (Vapour phase corrosion inhibitor) additives that can be added to the lubricant and continuously protects that vapor phase of the machine, until start-up. Visit www.chemtool.com



We Want to Hear from YOU

1. Please let us know what topics are of interest to you: submit interesting articles that we can share with the SAIT community, to admin@sait.org.za, for forwarding to The Editor. This will assist in disseminating information to all involved in Tribology.
2. Please also let us know what would interest you for technical sessions / webinars – or any 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.