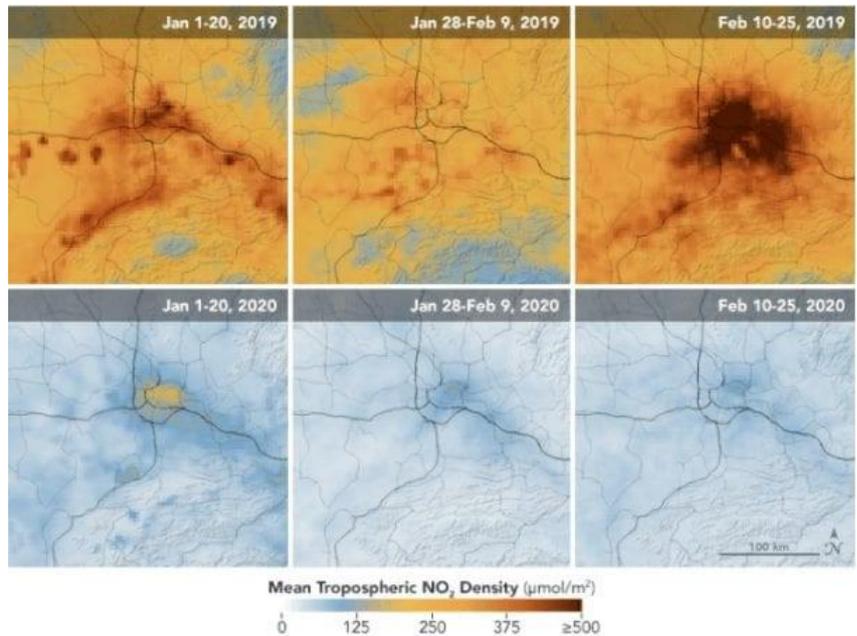


SAIT Newsletter, May 2020

Tribology

Tribology has a massive global impact on the environment. This fact is evident from the impact of Covid-19 on reduced friction – the international and local lockdown on the movement of people has grounded massive airline fleets while slowing and stopping the movement of an estimated 1,32 billion cars and trucks. All this loss of friction is reflected in the global atmosphere and the oil price:

- Some major cities in India and Asia are seeing blue sky for the first time in a long while – also proved in ‘before and after’ satellite-imagery. It’s not only exhaust fumes created to overcome friction but also rubber dust from all related friction-overcoming components such as rolling wheels, drive-line clutch dust and industrial emissions from manufacturing plants that support hundreds of millions of automobiles.
- The fact that wheels are static and not overcoming friction is evident in the oil price which has crashed to unprecedented low levels – the world has run out of oil storage capacity. Word on the street is that oil producers are paying to take away the excess production capacity.



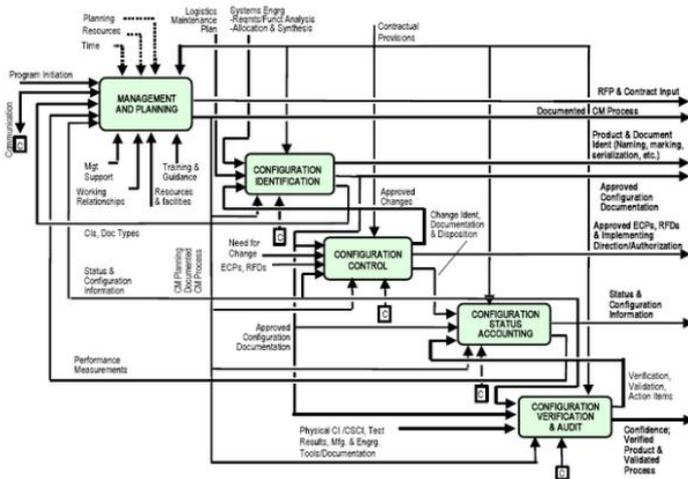
This map shows the sharp decline in emissions over Wuhan, the city that was the epicentre of the viral outbreak. (Image credit: NASA Earth Observatory)

We can breathe again – but for how long! How can we reduce friction? What will we learn from Covid-19?

Ref: <http://www.live-counter.com/number-of-cars/>

Root Cause Failure Analysis

RCFA – Root Cause Failure Analysis must be a standard operating procedure whenever repairs are completed and re-inspected. Proper RCFA stops the age-old habit of jumping to conclusions by determining whether a failure was tribological or caused by material fault, workmanship or design; then is the failure a one-off event? Or is it like a case of rabies, to be treated with regional and national concern? RCFA is vital to improve engineering designs, installations, material procurement, and/or maintenance practices – it is part of that other overlooked discipline of configuration management (CM) in which tribology plays a role.



Effective, efficient configuration management needs the reports that RCFA engenders. This partnership can have a massive impact on a company’s bottom line when the outcome is a permanent improvement in safety, processes and systems. It can also save a company’s image, as the airline industry can attest.

FIGURE: BY DEPARTMENT OF DEFENSE HANDBOOK - MIL-HDBK-61A CONFIGURATION MANAGEMENT GUIDANCE FIGURE 4.1 TOP LEVEL CONFIGURATION MANAGEMENT ACTIVITY MODEL, PUBLIC DOMAIN, [HTTPS://COMMONS.WIKIMEDIA.ORG/W/INDEX.PHP?CURID=5075790](https://commons.wikimedia.org/w/index.php?curid=5075790)

Configuration management (CM) is a systems-engineering process for establishing and maintaining consistency of a product’s performance, functional, and physical attributes with its requirements, design, and operational information

throughout its life. Tribological standards play a distinct role inside the disciplines of CM. Please visit https://en.wikipedia.org/wiki/Configuration_management

SAIT Training

Follow the path from data to information and into knowledge.

Lubrication Engineering Courses, 2020

Please Note: as from January 2020, SAIMM is allocating 4 CPD ECSA Credits to each of the SAIT 5-day Lubrication Engineering Courses.

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.

Costs: SAIT Members: R17 135 Non-Members: R19 090 Students: R5 267

- **LE 126: 25 to 29 May 2020, Johannesburg - Cancelled**

This course has been cancelled, as the current Level 4 Lockdown does not permit gatherings and we are still working on migrating the Lubrication Engineering Courses to an online platform. All those who were registered to attend Lubrication Engineering 126 will be notified individually that their registrations have been moved to our Lubrication Engineering Course, LE 128, in Johannesburg in July.

- **LE 127: 8 to 12 June 2020, Durban - Cancelled**

This course, too, has been cancelled; those registered will be contacted in due course with options of later or online courses that they can attend as we progress through the current lockdown.

- **LE 128: 27 to 31 July 2020, Johannesburg**
- **LE 129: 24 to 28 August 2020, Cape Town**
- **LE 130: 19 to 23 October 2020, Johannesburg.**

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: While the National Lockdown progresses, the SAIT plans to hold its AGM electronically, toward the end of May. When finalized, details 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 all matters to be decided.

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.

The SAIT's 2020 Annual Awards Dinner has been cancelled due to Covid-19 Lockdown Level 4 Regulations, which do not allow for gatherings.

International Events

For a list of upcoming international events please visit [Tribonet Conferences](#) where links take you to each event in full detail.

Contamination Corner



An empty 2-litre Coke bottle is not the way to collect a used oil sample.

Correctly: First engage with the oil analysis laboratory when choosing an oil sample bottle – do they have or recommend sample bottles? Also determine if the bottles are subjected to ISO 3722 testing. And then determine the cleanliness requirements for samples. Clear, ultraclean sample bottles are considered the best because of cleanliness plus easy inspection.

The sample bottle size should be based on the sample fluid type and the number and types of tests to be conducted. For most standard oil analysis tests, oil samples are taken in a 100 or 120ml bottle. For advanced or exception tests, a 200ml or larger bottle may be

required.

An example of when a larger sample might be necessary would be for hydraulic fluid testing, especially aviation hydraulic fluid. Sample bottles can also come in smaller sizes for other applications.

Set up a standard and be consistent – there's no point in analysing oil samples from contaminated containers.

Did You Know?



Did you know that the first tribometer has been around since the 18th Century? It was invented by the Dutch scientist Muschenbroek. A **tribometer** is an instrument that measures tribological quantities, such as coefficient of friction, friction force, and wear volume, between two surfaces in contact.

Pieter van Muschenbroek

*By Wsps - Own work, CC BY-SA 3.0,
<https://commons.wikimedia.org/w/index.php?curid=5410077>*

In most test applications using tribometers, wear is measured by comparing the mass or surfaces of test specimens before and after testing. Equipment and methods used to examine the worn surfaces include optical microscopes, scanning electron microscopes,

optical interferometry and mechanical roughness testers.

For more on this subject please visit <https://en.wikipedia.org/wiki/Tribometer>



Parting Shot

Covid-19 will cause serious injury to tribological standards.

Coronavirus is not just a human killer: it is also destroying businesses. The rush to survive in commerce will introduce extreme cost cutting which, in the absence of enforceable standards, will make the lowest price the dominant option. 'Cheap' usually means weak product attributes – low additive levels, poor quality base material and logistical contamination.

Tribology is about the lowest cost of ownership and a long-term view. These principles are all too easily discarded in an economic crisis. Someone wryly observed – **'You can make a loss for a while but you can only run out of cash once.....'**

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.