



The South African Institute of Tribology

Since 1985

'Understanding Friction, Lubrication and Wear'

SAIT's Office Hours: 09:00 – 15:00, Mondays to Thursdays; Fridays we work from home.

Telephone No. 011 804 3710: If no answer, please email secretary@sait.org.za

SAIT Technical Newsletter, March 2022

Tribology

Tribology – it is worth repeating - is the study of 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 a branch of mechanical engineering and materials science.

This introduction with thanks to the Society of Tribologists and Lubrication Engineers (STLE) www.stle.org

Tribology's economic and commercial impact is vast. The science reduces energy use, lowers the cost of maintenance and replacement, develops new technology, and solves resource problems, such as the lack of clean water. Proper tribological procedures save an estimated 1.3% to 1.6% of a nation's gross domestic product—a savings of hundreds of billions of dollars (U.S. currency) in larger countries. Virtually every nation has realized it cannot afford to overlook the economic, industrial, and commercial advantages of tribology. Consequently, tribology is a science that is constantly being advanced by thousands of researchers around the world. Lubrication engineering is the practical application of that science, generally in the development of lubricants and their proper usage and maintenance.

RED LETTER DAY FOR LUBRICATION STANDARDS

Wednesday 23rd March 2022

A MS Teams meeting will be held to discuss establishing a VLS system (Verification of Lubrication Standards) in South Africa. Please contact the SAIT to register for this important meeting.



JAMES WEBB SPACE TELESCOPE (JWST) UPDATE

Hovering in deep space, the JWST mirror alignment continues successfully. The scientific design of JWST allows the 'Hot Side' to currently operate at 37C⁰ while the 'Cold Side' operates at minus 236C⁰. The JWST website is a source of fascinating information and tribology can be proud of the role being played in managing friction over 1,5 million kilometres from earth in a hostile environment.

Please

visit <https://www.jwst.nasa.gov/content/webbLaunch/whereIsWebb.html?units=metric>



SAYTA, Under the Auspices of SAIT



To promote Tribology among younger people in tribology-related industries, the South African Young Tribologist Association (SAYTA) was recently formed. Howard Benadé (left) and Henco Booyesen (right) will be running this group from January 2022 onwards.



The aim of this group is to function as a support network between young individuals working in tribology and related industry, also linking young members to experts in the industry. This will ensure continuity in the transfer of knowledge and experience.

The group will also focus on addressing current issues experienced in industry.

SAYTA will be formalized in the next few months and become more active.

Younger SAIT members qualify, at no extra cost, to become a member of SAYTA.

International Events

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





Society of Tribologists and Lubrication Engineers

Every Wednesday, a new recorded webinar is available, 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



WEBSITE & CONTACT

www.wtc-2022.org

Information at: registration@wtc-2022.org

At the World Tribology Conference in 2022, the SAIT will present their bid to host the 8th World Tribology Conference 2026 in September of that year, in Cape Town.

Please support this bid in any way you can!

Contamination Corner

Fluid Wear Analysis Fails Under Contamination

Only accurate, procedurally driven sampling can make fluid wear analysis a worthwhile task.

An excellent article on fluid analysis by Dan Holdmeyer, and published in the STLE magazine TLT, lists all the disciplines to observe when conducting fluid sampling,

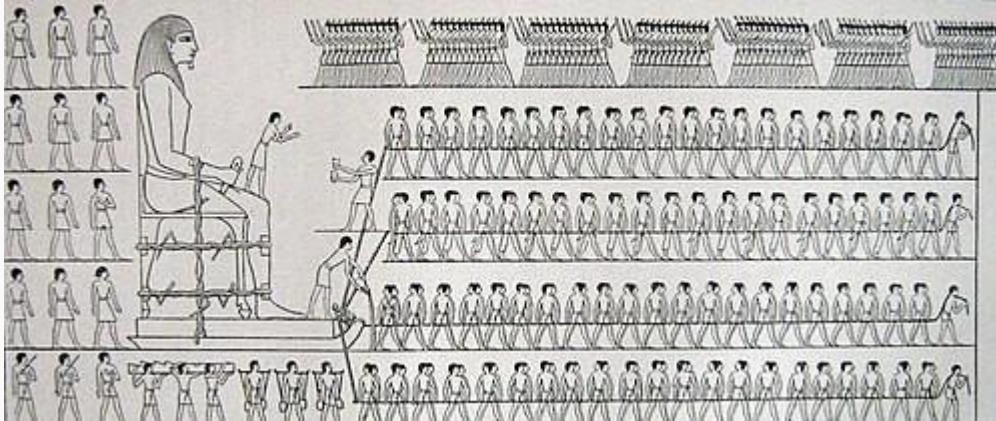
https://www.stle.org/files/TLTArchives/2022/03_March/Lubrication_Fundamentals.aspx

Contaminated fluid samples are a disinformation disaster that is so unnecessary all because of a lack of discipline and not sticking to standard operating procedures

Dan Holdmeyer is retired from Chevron Lubricants and is based in Washington, Mo. You can reach him at dan.holdmeyer@gmail.com.

Understanding Lubrication at a Nanoscale

The famous picture of transportation of an Egyptian statue to the grave of Tehuti-Hetep, El-Bersheh indicates that the concept of **lubrication** was already known to ancient Egyptians. The picture below shows how the slaves are dragging a large statue along sand. To help the slaves, one man, standing on the sledge supporting the statue, pours a liquid (oil/water) as a lubricant in order to reduce friction between sledge and ground/sand



Since then advance in engineering and science revealed the mechanisms of lubrication, at least at macroscopic level. The famous work of **Professor Reynolds** (1886) was a breakthrough and is a foundation of the current lubrication practices. However, new challenges linked to the development of **sustainable economy**, **reduced emissions** and increased **energy efficiency** dictate the need in further understanding of the mechanisms of lubrication.

Please visit: <https://www.tribonet.org/news/physicists-are-one-step-closer-to-understand-lubrication-at-nanoscale/>

2022 SAIT Training

Introductory Courses on Lubrication Engineering and Wear and Materials

If you are interested in attending one of our 1-day Introductory Courses,

see <https://www.sait.org.za/events/training/> or email us

at secretary@sait.org.za or admin@sait.org.za.

A certificate of attendance will be awarded to delegates who complete each course. Delegates will also earn 0.8 CPD Credits, as these courses are registered with ECSA.

More information on all SAIT Training Courses can be found

at: <https://www.sait.org.za/events/training/>

Lubrication Engineering Courses:

E 2e: 1 y	Introductory - Lube Eng	30 March 2022	Zoom	Online
VM 2e: day	Introductory - Wear & Materials	31 March 2022	Zoom	Online
E 135: 5 ys	Lubrication Engineering	9 – 13 May 2022	Face to Face	Johannesburg
E 136: 5 ys	Lubrication Engineering	6 – 10 June 2022	Face to Face	Durban
E 137: 5 ys	Lubrication Engineering	22 – 26 Aug 2022	Face to Face or Zoom	<i>Cape Town, Online or Jo'burg - TBA</i>
E 138: 5 ys	Lubrication Engineering	17 – 21 Oct 2022	Face to Face	Johannesburg
E 139: 5 ays	Lubrication Engineering	20 – 24 Feb 2022	Face to Face	Johannesburg

Please contact us at either secretary@sait.org.za or admin@sait.org.za for forms or further information.

SAIT Membership

If you are not already a SAIT Member, please consider joining us, to help save your machinery running costs, and to benefit the planet. It has recently been said that Tribology is The Science of the Future!

There are several categories of membership, with varying benefits for you, the Members. To find out more about SAIT Memberships, please go to <https://www.sait.org.za/membership/benefits/>, or email Isabel at secretary@sait.org.za or Berice at admin@sait.org.za.

Membership runs from March to February, with a discounted rate from July to December, or two months free when joining the following year in January or February.

Join us now, to learn more about the all-essential triumvirate of Friction, Lubrication and Wear!



From the President's Desk

The past few years have been very different to almost all institutions, particularly with respect to Covid. Training courses are the life blood and major source of income to the SAIT. The strict regulations around Covid reduced both the number of courses and the number of delegates on each course, which severely affected the institutes income.

Our long term and greatly respected Gill Fuller kindly retired in February 2021, and her place was taken by Isabel Bradley. Isabel had been

assisting Gill for many years and ably took up where Gill had left off, but made it clear that this would not be her long term position.

Isabel retired at the end of February this year. Thank you Isabel for taking over at such a difficult time and keeping the SAIT going so well.

After looking for some time for a new Secretary we welcome Jo-anne Stadler. Jo-anne has her own business in marketing and is a very good communicator. We look forward to many years of working with Jo-anne.

Science Park has been the home of the SAIT since inception, but the future of Science Park is not clear, so as a further cost reduction Jo-anne will be working from home, which also suits her situation perfectly. The SAIT phone line will go through to Jo-anne.

Parting Shot!

In common with other technologies, lubricants and lubrication have developed their own terminology or jargon, which frequently confounds the newcomer to this field. To this we must also add the terminologies surrounding friction. To demystify matters in this often-confusing area, the following definitions of some commonly used terms are offered. We are re-opening the file on terminology glossary – it's a living file and you are welcome to comment and contribute:



Abrasive Wear Wear between two surfaces in relative motion due to surface roughness (2 body) or particles (3 body).

ACEA The European Automobile Manufacturers Association (ACEA), founded in 1991, represents the interests of the sixteen European car, truck and bus manufacturers at EU level. ACEA is an Economic Interest Grouping. – www.acea.be

Acid Number A measure of the amount of potassium hydroxide (KOH) needed to neutralize all or part of the acidity in a petroleum product. Also specifies as neutralization number (NN) or neutralization value (NV) and total acid number (TAN).

Acidity See Acid Number, Total Acid Number and strong acid number

Additive A substance added to a petroleum product with the object of improving one or more of its properties or performance characteristics

And a final thought:

Changing landscapes

Technology is continually changing in terms of its performance and its lubrication demands. At the same time total cost of ownership and energy efficiency should be top of mind, as businesses struggle to remain competitive. All of this in a global economy with component shortages and shipping delays, has resulting in product shortages and product obsolescence.

It may well be time to relook at the lubricant technology / product that you are using, as there may well be better performing newer technologies that are available – the question is therefore – when last did you conduct or review your lubrication survey for your plant?

John Fitton
SAIT Member

We Want to Hear from YOU



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

The SAIT Mission:

To promote technology transfer, whereby local tribological problems can be solved and products improved.

SAIT President: P.G. Swan

SAIT Directors: D.P. Beard; L.E. Bradley (British); J.C.G. Claasen.