

SAIT Newsletter, February 2020

The SAIT Wishes all its Members and Colleagues a Productive and Prosperous 2020.

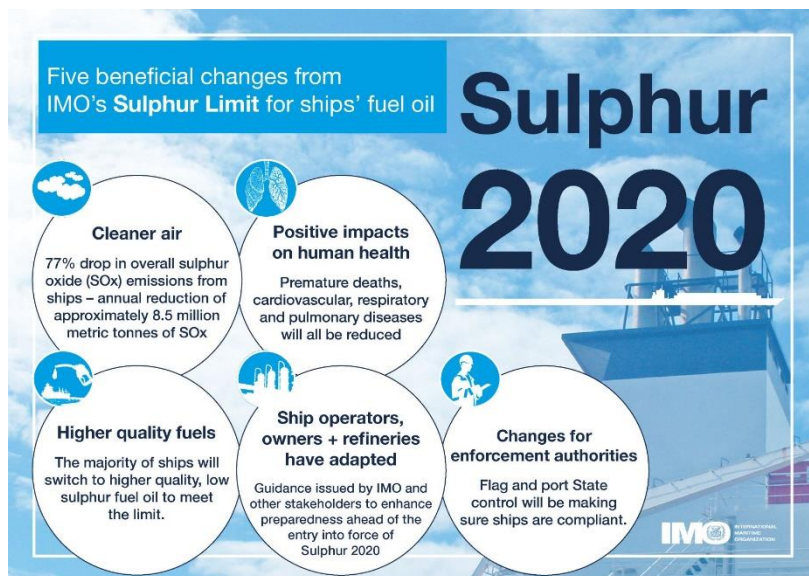
Tribology is not an isolationist science. A change in operating environment has a frictional knock-on effect which could be massive. A current example is IMO 2020 – International Maritime Organisation regulations to cut sulphur oxide emissions.

The main type of “bunker” oil for ships is heavy fuel oil, derived as a residue from crude oil distillation. Crude oil contains sulphur which, following combustion in the engine, ends up in ship emissions. Sulphur oxides (SO_x) are known to be harmful to human health, causing respiratory symptoms and lung disease. In the atmosphere, SO_x can lead to acid rain, which can harm crops, forests and aquatic species, and contributes to the acidification of the oceans.

From 1 January 2020 – hence IMO 2020 – the limit for sulphur in fuel oil used on board ships operating outside designated emission control areas will be reduced from 3,5% to 0.50% m/m (mass by mass). This will significantly reduce the amount of sulphur oxides emanating from ships and should have major health and environmental benefits for the world, particularly for populations living close to ports and coasts.

Foremost industry opinion points to the use of LSFO (Low Sulphur Fuel Oil) or ULSFO (Ultra Low Sulphur Fuel Oil) leading to lower base number (TBN) products which will introduce some issues. *Lubricant formulators are going to have to get very creative with their detergent and dispersant additives.*

For more detail please visit <http://www.imo.org/en/MediaCentre/HotTopics/Pages/Sulphur-2020.aspx>



ETT

Essential Tribology Terminology

Three of tribology's terms that are used and are agreed upon:

Volatility - Rapid evaporation.

White Oil - A very highly refined straight mineral oil, free of nitrogen, sulphur, aromatics and unsaturated hydrocarbons, having a high degree of chemical stability. The absence of polar compounds in these oils results in a somewhat impaired lubricity in comparison with less highly refined oils.

Worked Penetration – The penetration of a sample of lubricating grease immediately after it has been brought to 25°C and worked 60 strokes in the ASTM grease worker.

NOTE – *These terminology definitions have been sourced from the SAIT training manual. They are now going to be updated, expanded and refined to be reissued in due course (watch this space!)*

SAIT Training

Follow the path from data to information and into knowledge Lubrication Engineering Courses

*Each course is registered with ECSA and allocated an SAIMM number,
and is awarded five CPD credits.*

*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.

Book your place now to train in February 2020 at our 2019/20 rates:

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

- LE 125: 24 to 28 February 2020, Johannesburg

NB: From May 2020, all courses will be at the revised 2020/21 rates:

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

SAIT Training Schedule, remainder 2020

- LE 126: 25 to 29 May 2020, Johannesburg
- LE 127: 8 to 12 June 2020, Durban
- LE 128: 27 to 31 July 2020, Johannesburg
- LE 129: 24 – 28 August, Cape Town
- LE 130: 19 to 23 October 2020, Johannesburg.

For full details and to download Lubrication Engineering Registration Forms, go to
<http://www.sait.org.za/events/training/>

The STLE's CLS, OMA and CMFS Examinations at SAIT

Hosted by The SAIT in 2020:

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".

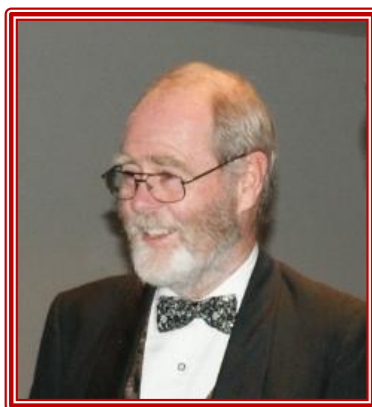
For further information, costs and to register, please contact Gill, Isabel or Berice at the SAIT offices:

Tel. (+27) (0)11 804 3710 or email secretary@sait.org.za or admin@sait.org.za.

SAIT Events

Technical Meetings

Tuesday 4 February 2020 at 18:00 at Science Park, 1 Northway, Kelvin, Sandton:



Patrick Swan

"Are Power Generation Challenges Africa's Biggest Threat?"
Presented by Patrick G Swan of Aswan Consulting and Vice President of SAIT.

RSVP: admin@sait.org.za, secretary@sait.org.za, or phone 011 804 3710

And ...

Tuesday 3 March 2020 at 18:00 at Science Park, 1 Northway, Kelvin, Sandton:



Dr Danie Fourie

**“Challenges at the Railway Wheel-Rail Interface
Related to Friction, Lubrication, Wear and Friction-Induced Noise”
presented by Dr Danie Fourie, Senior Engineer, Transnet Rail.**

RSVP: admin@sait.org.za, secretary@sait.org.za, or phone 011 804 3710

For the full details, please go to <http://www.sait.org.za/events/tech-meetings/>

LOCAL EVENTS

PLEASE DIARISE NOW

LOCAL IS GOOD AND NEEDS YOUR SUPPORT

- **Evening Technical Meeting – Tuesday 4 February 2020** - Patrick G Swan of Aswan Consulting and SAIT Vice-President, will give a presentation at 18:00 on Tuesday 4 February 2020 at Science Park, 1 Northway, Kelvin. **“Are Power Generation Challenges Africa’s Biggest Threat?”**
- **Evening Technical Meeting – Tuesday 3 March 2020** - Dr Danie Fourie, Senior Engineer at Transnet Freight Rail will give a presentation at 18:00 on Tuesday 3 March 2020 at Science Park, 1 Northway, Kelvin. *‘Challenges at the Railway Wheel-Rail Interface related to Friction, Lubrication, Wear and Friction-Induced Noise’*
- **CBM CONNECT** – Johannesburg, South Africa **10-12 March 2020 Radisson Blu Gautrain Hotel**. This conference is South Africa’s best and only conference that is 100% for and about the machine condition monitoring industry. The conference covers a broad range of technologies and sub-industries that revolve around keeping machinery in working condition – please visit <https://thecbmconference.com/sa2020/> It’s also the first of its kind to be held in Africa.
- **The 36th SAIT Annual General Meeting** will be held on **Tuesday evening 5 May 2020** at Science Park, 1 Northway, Kelvin, Sandton. Paid-up members are urged to attend. Further details will be made available when finalised.
- **The SAIT’s 2020 Annual Awards Dinner** will be held on **Friday evening 15 May 2020** at Cedarwoods of Sandton. Members and their guests are welcome. Further details and a booking form will be made available when finalised.

International Events:



The following have been sourced from upcoming events at www.tribonet.org

- **19 – 22 April 2020:** [2nd Korea-Tribology International Symposium](#)
- **27 – 29 April 2020:** [3rd African Conference in Tribology](#)
- **03 – 7 May 2020:** [75th STLE Annual Meeting & Exhibition](#)
- **04 – 5 May 2020:** [4th International Conference on Materials Science and Engineering](#)
- **13 – 15 May 2020:** [Contact Mechanics International Symposium 2020](#)

Tuesday 8 – Thursday 10 September 2020: [47th Leeds-Lyon Symposium on Tribology for a Sustainable Future University of Leeds, Leeds, UK.](#)

The deadline for the submission of an initial one-page abstract for oral presentation is **Monday 24 February 2020**. Offerings of original research are requested in (but not limited to) the following areas:

- sustainable and green lubricants
- novel materials with advanced tribological performance
- advanced measurement and simulation methods
- interface life-cycles
- sustainable interfacial design
- industrial application of these technologies

Registration via the Online Store will open on Monday 6 April 2020.

Keynote Speakers:

- Dr Tabassamul Haque, ExxonMobil, USA
- Professor Roger Lewis, University of Sheffield, UK

Key dates:

- Monday 24 February 2020: Submission of initial 1-page abstract for oral presentation
- Wednesday 29 April 2020: Notification to authors of oral abstract acceptance
- Monday 22 June 2020: Submission of 1-page abstract for poster presentations
- Wednesday 8 July 2020: Notification to authors of poster abstract acceptance
- Monday 20 July 2020: Submission of final 1-page abstract for oral presentations
- Tuesday 30 July 2020: Submission of paper to chosen journal

Sunday 5 – Friday 10 September, 2021 – SAVE THE DATE! It is a great pleasure to invite you to join the **7th World Tribology congress (WTC 2021)** to be held in **Lyon, France September 5-10, 2021**.

WTC 2021 aims to highlight recent important progresses in all aspects of Tribology, to strengthen the links between academy and industry, to provide a unique opportunity for discussion concerning the latest developments in Tribology and to promote international collaborations and exchanges. The Congress will consist in **scientific sessions, keynote talks and symposia** on topics at the cutting edge of various aspects of Tribology, a wide **exhibition** and additional events – scientific and non-scientific. We look forward to welcome you at WTC 2021!

Phillipe VERGNE and Philippe KAPSA are the General Chairs.

Abstract submission: Opens March 2020

Early-Bird Registration: Opens September 2020

Website: www.wtc2021.org

For further information, feel free to contact us at: General Information – contact@wtc2021.org or Sponsorship & Exhibition – sponsor@wtc2021.org.

Contamination Corner:

Moisture in lubricating oils can have an overwhelming impact on component lifecycles.

Water results in oxidation, acid formation, varnishing, sludging, foaming, viscosity problems – water first thickens and then thins the oil. Water can also cause an oil to become conductive. Water also creates conditions for corrosion to dramatically increase.

According to press reports, the life of rolling element bearings could be shortened by as much as 75% without ever knowing that moisture is in the oil, based on visual observation.

Did You Know?

Did you know that static electricity is an imbalance of electric charges with the surface or on the surface of a material?

The charge remains where it is until it is able to move away through an electric current or electrical discharge.

While a spark of static electricity can have a measurement of thousands of volts, it only contains a small current and only lasts for a brief time period. Consequently, it has little energy or power. While lightning is a powerful example of static electricity, over 70% of people struck by lightning survive. Static electricity builds up faster on dry non-humid days. It also results in metal fences emitting electrical charges and the electrical systems in cars shorting out.

TRIBONET looks at this subject in detail under '*Mystery of Friction and Static Electricity*' - Get more at: <https://www.tribonet.org/mystery-of-friction-and-static-electricity/#comment-12876> and also at

Does Flexoelectricity Drive Triboelectricity?, C. A. Mizzi, A. Y. W. Lin, and L. D. Marks, [DOI:https://doi.org/10.1103/PhysRevLett.123.116103](https://doi.org/10.1103/PhysRevLett.123.116103).



PARTING SHOT

Lubricant foam has a low load carrying ability.

Excessive foam build-up in a reservoir or sump will rapidly lead to excessive wear and catastrophic failure of the system. Too high a level of lubricant in an engine sump, by overfilling or mis-calibration of the level indicator (dipstick), causes the crankshaft and connecting rod big-end caps to whip up the lubricant into an all-pervading foam and rapid damage ensues.

Air leaks into the oil flow or an open drop from a supply pipe into a hydraulic fluid reservoir can generate foam. **Operationally, engines should not be overfilled.** The level indicator must be correct, leaks stopped, and supply pipes extended to deliver return lubricant below normal liquid surface level in a reservoir.

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



We Want to Hear from YOU!

1. Please let us know what topics are of interest to you, or submit interesting articles that we can share with the Sait community. This will assist in disseminating information to all involved in Tribology. Please send your thoughts to admin@sait.org.za for forwarding to The Editor.
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!
