

SAIT Technical Newsletter, May 2021

Bringing the SAIT Executive Committee Closer to SAIT Members and the Wider Tribological Community.

Patrick Swan, SAIT President	083 265 3072	pgswan@iafrica.com
Johan Claasen, SAIT Vice President, Director	082 780 9364	johan.claasen@total.co.za
David Beard, SAIT Treasurer, Director	082 850 3205	beardfamily@mweb.co.za
Howard Benade	072 245 9390	howardpbenade@gmail.com
Leon Bradley, SAIT Director	083 441 9679	quality@fluteink.com
Eben du Plessis	082 892 8404	ebendupl2017@gmail.com
Dave Gamble	083 308 2643	davgam@wol.co.za
Sam Manamela	076 521 2319	sam@bahlaloga.zo.za
Faiz Regal	083 455 9675	faiz.regal@astronenergy.co.za

Tribology



Tribology is going to be subject to massive future changes as policy decisions flowing from climate change take effect.

Picture Credit: kwest/Shutterstock.com

Combusting hydrocarbons extracted from deep under the earth, fracking, poor quality atmosphere, and extreme weather have all contributed to force the pace of switching to sustainable energy sources. Bosch, Shell, and Volkswagen have now come up with a low-carbon renewable gasoline. Their new fuel called "Blue Gasoline" contains up to 33% renewables content, similar to R33 Blue Diesel which was launched earlier. Bosch, Shell and Volkswagen said this product has been tested to result in a well-to-wheel reduction

in carbon emissions of at least 20% per kilometre driven. This means a fleet of 1,000 VW Golf VIII 1.5 TSIs alone could save more than 230 metric tons of CO₂ per year, assuming an annual mileage of 10,000 kilometres per vehicle.

<https://www.fuelsandlubes.com/bosch-shell-and-volkswagen-develop-renewable-gasoline/>

Another press report from Fuels & Lubes notes that 'Finland's Neste, the world's leading producer of renewable diesel and sustainable aviation fuel produced from waste and residue raw materials, will modify its existing renewables production capacity in Rotterdam, the Netherlands, to enable production of sustainable aviation fuel (SAF). Currently the refinery produces mainly Neste MY Renewable Diesel™. The modifications to the refinery, an investment of approximately EUR190 million (USD229 million), will enable Neste to produce up to 500,000 tons of SAF per annum as part of the existing capacity.'



Picture Credit: <https://airlines.iata.org/analysis/realizing-the-potential-of-sustainable-aviation-fuel>

So, what has this to do with friction? The point is that the new 'green' fuels will encounter traditional lubricants during combustion and change the way of service, analysis, forecast, and the use of lubes – unless of course lubricant manufacturers rapidly adapt to these new challenges.

Tribology is an integral part of the whole picture.

Training

Please review <http://www.sait.org.za/events/training/>.

Please note that we have recently been advised by SAIMM that all of our Lubrication Engineering Courses, registered with ECSA, now carry 3.8 CPD Credits.

Lubrication Engineering 130, our next course, is scheduled to be held **in Durban from 7 – 11 June 2021; this course requires a minimum of 10 delegates**. Please go to [this link](#) to download the form, or contact Isabel or Berice at admin@sait.org.za.

Please note that our next **Training Newsletter** will be sent to you next week.

SAIT Events

SAIT Membership Fees: A huge thank you to all who have paid their 2021/22 Fees already, and a reminder that SAIT Membership Fees for 2020/21 are due; 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 Payment by email at admin@sait.org.za. If you are unable to pay at this time, please contact the Interim Secretary at secretary@sait.org.za to arrange for continuation of your membership. Thank you.

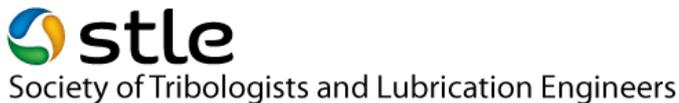
**Proposed Seminar – Wednesday afternoon, 30 June 2021,
'Engineering Reliability and Cost Reduction through Tribology.'**

A Call for Papers will be sent out soon; please look for it in your inbox.

We will keep you informed of all updates and changes to our schedule on our website, www.sait.org.za.

International Events

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



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

Please note this international fuel event

13th International Colloquium Fuels
15-16 September 2021 Ostfildern Stuttgart Germany
In person and online – a hybrid event.

Contamination Corner

Influence of Contaminants on Bearing Life

From “*The Practical Handbook of Machinery Lubrication*”



When bearings operate in a clean environment, the primary cause of damage is the eventual fatigue of the surfaces where rolling contact occurs. However, when particulate contamination enters the bearing system, it is likely to cause damage such as bruising which can shorten bearing life dramatically.

Picture Credit: [Bearing Failure: Why Bearings Fail & How You Can Prevent It](#)
By IBT Inc July 03, 2018

Furthermore, when dirt from the environment or metallic wear debris from some component in the application is allowed to contaminate the lubricant, wear can become the predominant cause of bearing damage. If, due to particulate contamination of the lubricant, bearing wear becomes significant, changes will occur to critical bearing dimensions which could adversely affect machine operation.

In general, the important parameters influencing bearing wear are contaminant particle size, concentration, hardness and lubricant film thickness. Increases in all these parameters except film thickness, will increase bearing wear.

Increasing lubricant viscosity will reduce bearing wear for a given contamination level.

Bearings operating in a contaminated lubricant exhibit a higher initial rate of wear than those not running in a contaminated lubricant. But, with no further contaminant ingress, this wear rate quickly diminishes as the contamination particles are reduced in size as they pass through the bearing contact area during normal operation.

FAQS – Did You Know?

A couple of frequently asked filtration questions that impact on friction:

- **Does additional filtration affect the oil analysis result?**

Yes, Good bypass filters do remove more debris than standard full flow filtration. This can result in lower wear metal readings and emphasises the need for trend analysis.

- **Do filters need to be analysed every time they are discarded?**

Yes. All filters should be examined before they are thrown away. If the indications are unclear, the filter should be sent for analysis.

<https://www.wearcheck.co.za/info/faq/faq-filters.html>

Tribology evolves as a science of the environment!

‘So then, Lubricants Can’t Be Green ... Can They?’ This is a serious question asked in a white paper by **John Sander** | Vice President of Research & Development, **Lubrication Engineers**.

And the answer to “Can lubricants be green?” is **an unequivocal yes!**

‘The goal of this paper is to show that an unlikely industry – lubrication – can be very green through responsibly planned purchasing, storage, use, and disposal; and to challenge the limited regulatory view of green lubricants that fails to consider longer lubricant and component life, and decreased energy use.’



The lubricants industry is part of the much larger petroleum industry. In the aftermath of catastrophic accidents, such as the Deepwater Horizon explosion in the Gulf of Mexico and the grounding of the Exxon Valdez near Alaska, both of which resulted in high profile ecological damage caused by huge amounts of crude oil being spilled into the environment, petroleum has developed a reputation as being a dirty industry. Incidences such as these are evidence that some organizations in the exploration, production, and transportation segments of the petroleum industry have contributed to that negative reputation and continue to have their challenges, but the entire petroleum industry should not be found guilty by association. In fact, this industry has made possible many of the products that are responsible for the quality of life enjoyed by increasing numbers of people around the world.



This paper looks at: **Green definitions, lubricant formulation, holistic view of green lubricants, biodegradable, low ecotoxicity, non-bioaccumulative, biodegradability, cradle to grave, cradle to cradle, reuse, recycling, resource conserving, improved reliability,**

Picture Credit: [Green Lubricants: Making a Global Case](#) Posted on July 28, 2017 by Bob Gresham.

The potential for a world-class lubrication reliability program to lead to energy savings and extension of lubricant and component life ought to be considered as part of a holistic view of what it means to be

green.

From the President's Desk – Patrick G. Swan



Committee members and Presidents came and went over the long history of the SAIT, but the one constant, who was seen by many as 'The Institute' was Gill Fuller. Gill served as Secretary for all the years, but, as everything eventually comes to an end, Gill has elected to retire.

We thank Gill for her years of dedicated service, and wish her well for her retirement. When the Covid-19 lockdown restrictions allow we will hold a suitable farewell function for her. In the meantime, she is completing a history of the SAIT, which we will launch at her farewell function.

Parting Shot!

"Grease compatibility," says John Fitton, "Is a real, practical, problem that is the result of ignorance combined with a 'grease-is-grease' attitude".



WearCheck Technical Manager, Steven Lumley, reinforces this fact – "Very few of the grease samples we analyse are homogeneous – they are invariably a mixture of different greases".



All greases are not compatible with one another, and if mixed, can cause failure, due to changes in consistency, abnormal oil separation, changes in drop point, shear stability, as well as possible additive incompatibilities.

*Picture Credit: [The art of manufacturing grease](#)
[Andrea A. Aikin, Contributing Editor | TLT Grease June 2020](#)*

Grease compatibility charts have been around for many years, but the data presented is often conflicting and it is not only the soap type that should be considered, but also the base oil (type and viscosity). Care should be taken when mixing / changing grease and complete testing should be conducted before changes are made.

We Want to Hear from YOU



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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, 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.