

SAIT Newsletter, August 2022

Tribology

Tribology is hard at work – out of this world.

Stunning first images sent from the James Webb Space Telescope (JWST) also rely on a proprietary oil provided by Nye Lubricants to lubricate multiple mechanisms within the telescope. The principal advantage of JWST is that it is an infrared instrument operating at minus 267 degrees Celsius and revealing the Universe in far more detail than we ever hoped for.



“In an application as large as this, the anti-wear properties of a grease or oil are critical,” Tony Dotson, aerospace industry manager at Nye Lubricants, said in a press release.

The telescope uses a proprietary multiply-alkylated cyclopentane Pennzane brand oil, which was originally developed by Pennzoil and for which Nye holds exclusive distribution rights. The polymers in the oil, commonly referred to as MAC, have a molecular structure that resists wear-related breakdown, making them ideal for heavily loaded, metal-on-metal applications.

https://www.lubesngreases.com/lubereport-americas/4_51/nye-lubricates-space-telescope/

VLS-SA – Verification of Lubrication Standards ‘What we do’ – UK Outfit

Here’s an opportunity to really understand the role of VLS in setting useful, implementable standards that minimise fraud, creating up a level playing field for price, and limiting the impact of corruption. Please visit this link and be inspired.

<https://ukla-vls.org.uk/what-we-do/>

VLS (UK) is very clear on what they will do – what they will not do – and what they offer

Let’s support the establishment of a South African VLS



Contamination Corner

Dust: An Out-of-This World Problem. A view on dust contamination on the moon by **Mike Gianonne from NASA’s Glenn Research Center**

Here’s a fascinating article – please visit

<https://www.nasa.gov/feature/glenn/2021/dust-an-out-of-this-world-problem>

To quote – ‘Dust is a nuisance on Earth. Thankfully, we can simply pull out a vacuum or grab a rag to rid ourselves of the concoction of dust mites, fibers, soil, pollen, and other tiny bits.

Beyond Earth’s atmosphere, dust is insidious. On the Moon, it’s made of crushed rock and is damaging to everything from lunar landers to spacesuits and human lungs if inhaled. As NASA readies to return to the Moon with the [Artemis program](#), a team at NASA’s Glenn Research Center in Cleveland is working to mitigate dust’s dangers.’

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



Feedback from this International conference will be provided on the 7th September, by David Beard, SAIT Exco member.

www.wtc-2022.org

TERMINOLOGY GLOSSARY

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:

Brookfield Viscosity

A measure of the apparent viscosity as determined by the Brookfield viscometer at a controlled temperature and shear rate.

Cams

Eccentric shafts used in most internal combustion engines to open and close valves.

Carbon Residue

A measure of the coke-forming tendency of oil exposed to high temperatures according to the Conradson and Ramsbottom test.

Catalytic Cracking

Process of breaking down the larger molecules of heavy oils into smaller ones by the action of heat, with the aid of a catalyst. In this way heavy oils can be converted into lighter and more valuable products (in speech generally abbreviated to cat. Cracking).

Catalytic Converter

Oxidising converters remove hydrocarbons and carbon monoxide from the exhaust gas, while reducing converters control nitrogen oxide emissions. They use noble metal catalysts that can be "poisoned" by lead or phosphorous compounds in the fuel or lubricant.

2022 SAIT Training

Follow the path from data to information and into knowledge.

Please visit our website for further information <https://www.sait.org.za/events/training/> or email us at secretary@sait.org.za or admin@sait.org.za.

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

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

SAIT AGM

31 August at 16:30

Please be on the look out for an invitation to attend the SAIT AGM.

Important announcements will be made - so please attend and share your thoughts

Please nominate committee members and make a difference to the Institute and Tribology in general

Your support would be highly appreciated

Literature / articles of interest

The following articles may be of interest - please click on the images below for the links.

Tribology & Lubrication Technology

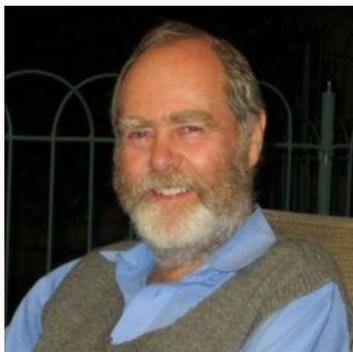
Tribology & Lubrication Technology (TLT) is the official monthly publication of STLE and was created to aid in the technical education and professional development of STLE members and industry colleagues. Through its print and digital editions, TLT delivers world-class technical content to some 15,000 lubricant professionals each month. Each issue includes feature articles, best practice analyses, industry surveys, interviews with leading lubrication professionals, emerging-technology reports, lubrication fundamentals and much more.



SA Mechanical Engineer



Please share other useful articles and publications that may be of interest to members.



From the President's Desk

Where are the Tribologists?

Business is conservative, far too conservative. And run by accountants. Accountants set budgets and the company is then rated against its ability to conform to its budget. Regular breakdowns and maintenance is budgeted for. If the unheard of happens, and there is a huge breakdown, which is not in the budget, the accountant somehow manages to produce the capital to replace the broken machine.

Tribologists are constantly looking for ways to reduce friction and prevent wear, Unfortunately this can play havoc with the existing budget structure because money that hasn't been budgeted for needs to be spent to reduce overall costs, which have been budgeted for. And it will also prevent the huge breakdowns.

To recognise and fund the critical importance of a company tribologist must be the objective of any company that intends to stay in business. Not only will it reduce overall operating costs, but it can also reduce future costs, such as greenhouse emissions.

Patrick Swan

3 July 2022

Parting Shot!



Asperities spell out the true contact area!

In 1950 Philip Bowden and David Tabor gave a physical explanation for the laws of friction. They determined that the true area of contact is a very small percentage of the apparent contact area. True contact area is formed by the **asperities**.



Asperity, defined as "unevenness of surface, roughness, ruggedness" ([OED](#), from the Latin *asper* — "rough"), Smooth surfaces, even those polished to a mirror finish, are not truly smooth on an atomic scale. They are rough, with sharp, rough or rugged projections, termed "asperities".

[https://en.wikipedia.org/wiki/Asperity_\(materials_science\)](https://en.wikipedia.org/wiki/Asperity_(materials_science))

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:

"Promoting knowledge and skills transfer in friction and wear to achieve a lower Total Cost of Ownership (TCO)."

SAIT President: P.G. Swan

SAIT Directors: D.P. Beard; D Gamble



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