



The South African Institute of Tribology

Since 1985

'Understanding Friction, Lubrication and Wear'

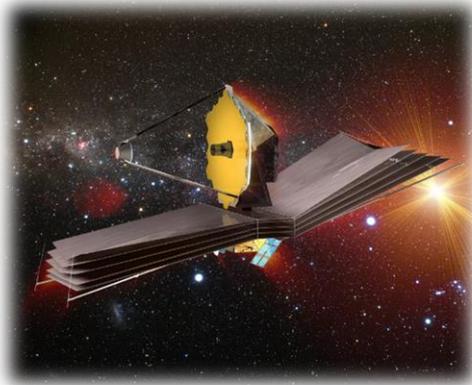
SAIT's Office Hours: We mostly work from home.

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

SAIT Technical Newsletter, February 2022

Tribology

Tribology is at work out of this world.



The James Webb Space Telescope (JWST) is a USD 10 Billion 25-year project launched on Christmas Day 2021 to an agog-stricken scientific world.

This artist's impression shows the James Webb Space Telescope fully deployed in space. (Image credit: ESA)

Forecast to be 100 times more powerful than the outstanding, aging Hubble, the JWST carries with it the expectations of being **able** to unlock secrets and mysteries of our Universe. The deployment of JWST depends upon 300 single point items in the unfurling of heat shields, antenna and all the equipment that will

allow transmission of massive megabytes **from** a unique position 1,5 million kilometres from earth known as the Lagrange point. This will be the JWST home and is a position in space where gravitational forces and the orbital motion of a body balance each other. Therefore, a Lagrange point can be used by spacecraft to 'hover'.

Mechatronic friction must be precisely calculated when operating in the **vacuum of deep space** against a cosmic background temperature of minus 455 degrees Fahrenheit (**minus 270°C**).

The JWST, developed in conjunction with the European Space Agency and Canadian Space Agency, will be used to study and compare the evolution of exoplanets to planets in our solar system. Nye, a Fuchs Group Company, based in Fairhaven, Massachusetts, became involved with the project in 2002. Founded in 1844, Nye manufactures synthetic lubricants for such industries as aerospace, automobile manufacturing and food and beverage processing.

Please visit: https://www.lubesngreases.com/lubereport-americas/4_51/nye-lubricates-space-telescope/ Report by George Gill - December 22, 2021

What Is the Meaning Of 'SAE'?

The 'SAE' in motor oil, stands for Society of Automotive Engineers and is a United States-based, globally active professional association and standards-developing organisation for engineering professionals in various industries. The organisation has adopted the name SAE International to reflect the broader emphasis on mobility. SAE International has over 138,000 global members. Membership is granted to individuals, rather than companies.



What does this mean for Tribology? SAE developed a certified scale for both engine (motor oil grades) and transmission oils. These certified scales are benchmarks for performance standards.

Please visit: https://en.wikipedia.org/wiki/SAE_International

SAIT 2022

SAIT Secretariat: Isabel Bradley, who has worked as SAIT Secretary for the last year and was previously the SAIT's Assistant Secretary, will take her leave of the Institute on 25 February. She is retiring to enable her to give more time to her family and to follow her hobbies. We wish her all the best for a relaxed future.

Our new SAIT Secretary will be Jo-anne Stadler; she has been working with Isabel for the last two weeks and will take over the job completely on Monday 28 February 2022. Welcome, Jo-anne!

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:

Lubrication Engineering Course 134 is currently running at CedarWoods of Sandton, to be completed with an Exam on Friday afternoon 25 February 2022.

The 2022/23 Courses will be announced soon at <https://www.sait.org.za/events/training/> and in the next Training Newsletter.

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 Jo-anne 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!**



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) of the SAIT Executive Committee, will be running SAYTA



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 then become more active.

Young 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.

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

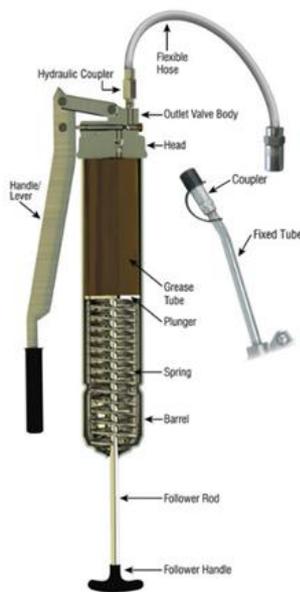


Society of Tribologists and Lubrication Engineers



Contamination Corner

Control the humble grease gun – don't waste – innovate!



Many industrial customers have a large pail of grease that stands open. A colour change occurs if you rub your fingers through this grease, due to a visible layer of dust contamination. **Dirty hands are generally used to place contaminated grease into a dirty grease gun.** In addition, the process of purging a bearing with grease using a grease gun is physically arduous and time-consuming, wasteful and unnecessary. And how many grease guns are left lying on the floor?

Filter Focus Chief Operating Officer Craig FitzGerald observes: “Everyone involved in greasing operations in South African industry has been taught to purge grease until it comes off the seals. This is simply the way that things have been done until now, despite the fact it is wasteful and detrimental to bearings” – never forget the environmental impact of wasted grease.

Grease Gun Explained

From: <https://www.machinerylubrication.com/Read/29356/grease-gun-anatomy>

FitzGerald points out – “A bearing has fine tolerances. Fill it with contaminated grease, and [bearing-life](#) will be severely shortened,” FitzGerald points out. “This effectively leads to unnecessary wearing of the lubricated surfaces of the [bearing](#) and race, and condemns your [equipment](#) to a very short [service](#) life with regular unplanned stoppages.

<https://www.engineeringnews.co.za/article/automated-grease-pump-takes-dirt-and-effort-out-of-greasing>

Mixing grease types – a bad idea

Time to upgrade damaging & low-grade approaches to grease

Out of the nearly 5000 grease samples that WearCheck has analysed, more than 40% were mixtures of different grease types. This is bad news – incompatible or wrong grease types leads to early failure and downtime.



Greases are available with many different thickener types, base oil types, and additive packages. Compatibility of these different grease types can be very important for users of grease-lubricated equipment. Mixing of different greases can result in changes to physical and performance characteristics, leading to inferior properties of either of the original greases before mixing. Mixing incompatible greases often results in softening but may also lead to hardening. In extreme cases, bleeding. Separation of the thickener and oil can be so severe that the mixture may run out of the greased component. Other properties that may be affected are dropping point, shear stability, pumpability, and oxidation stability. **Extreme cases of grease incompatibility can lead to catastrophic failure of the components being lubricated.**

It is always best to avoid mixing different types of Greases. However, when mixing is inevitable, consult with your lubricant supplier and equipment manufacturer to ensure that the mixture of greases will be acceptable.

Ultimately understanding the need and the methods for appropriate grease selection will go a long way toward improving lubrication programs and the reliability of lubricated machinery. So where is your grease policy guideline, SOP, and application chart?

For more information, please contact Steven Lumley at WearCheck - stevenl@wearcheck.co.za



From the President's Desk

Patrick G Swan

Happy New Year!

Happy New Year to all, especially tribologists. As the grip of the covid pandemic slowly releases, we trust that 2022 will be an awesome year filled with opportunities and growth. While we beaver forward this year, the world will be watching the miracle of the James Webb telescope unfolding, millions of kilometres out in space.

Twenty-five years in the making, the James Webb telescope will be about the size of a tennis court when fully functional but had to fold into a package of a few cubic metres for launching. The real success of this project is that tribology was included in the design right from the beginning. This telescope was developed to scan in the infra-red light range. To achieve this it must operate at close to absolute zero temperature, below -233°C, while on the sunny side the skin temperature will be almost hot enough to boil an egg.



*Artist's impression of the James Webb Space Telescope (Webb), folded in the Ariane 5 rocket during launch from Europe's Spaceport in French Guiana.
Credit: ESA – D. Ducros*

Without dedicated tribological involvement it is not guaranteed that this project would have taken off, let alone deploy itself so successfully, as the friction that inevitably accompanied its unfolding was overcome with ease. Now we can expect the inevitable wear that will occur to be restricted so that the design life of 10 plus years is exceeded.

Parting Shot!

Essential Partners – Lithium & Grease



Lithium based grease is still the most used grease technology globally. This is due to it being used as a multi-purpose grease in numerous applications.

With climate change impacting us all and the significant changes and mandates with regard to carbon (CO₂) reduction in the transport sector – Lithium demand has increased over 300 percent in recent months, mainly for the demand for batteries and limited resources being mined.

This will significantly impact the cost of the lithium simplex and lithium complex based greases in the near future. This may well be the time to relook at your grease technology and move to Calcium Sulphonate, with added benefits?

A grease survey may be required for improved performance and ensure that the most cost-effective grease is being used.

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."



Telephone: +27 (0)11 804 3710

