Energy storage mechanism lubricating oil

Which lubrication systems were designed?
Conclusions In this work, three groups of lubrication systems were designed, including: MoS 2 film lubrication, synergistic lubrication of MoS 2 film and gear oil, and the T-Go hybrid oil and MoS 2 film composite lubricating coating.

How to improve tribological properties of lubricating oil?
Adjusting the viscosity of lubricating oil and using lubricating oil additivesare effective methods to improve the tribological properties of lubricating oil . 2D materials are commonly used as lubricant additives in oils to achieve different functions in the contact area.

Does lubricating oil scavenge free radicals?
By combining the experiments and simulations, the solubility, diffusivity, and permeability of O 2 in lubricating oil, and the diffusion behavior and the activity to scavenge free radicals of antioxidants in lubricating oil have been explored.

What is lubricating oil & grease?
Lubricating oil and grease serve as essential components that reduce friction,wear,and prolong the life of moving mechanical parts. The effectiveness of the formulation of the lubricant and grease is easily impacted by various factors,such as temperature,pressure,and heavy loads.

How to improve oxidation stability and service life of lubricating oils?
To improve the oxidation stability and service life of lubricating oils,the composition and structure of antioxidantsshould be strategically designed,and these parameters have significantly affected the performance of antioxidants in lubricating oils.

What is lubrication theory?
Lubrication theory is linked to numerous fields of expertise outside of tribology, and without this interdisciplinary aspect, the progression of lubricants and lubrication technologies within the vast array of applications may not have reached the necessary levels of success.

The increasing adoption of PEEK (polyetheretherketone) in many industrial applications has promoted intense research to optimize its lubrication along with the development of friction reducers (FRs), additives that help in reducing fuel consumption and, consequently, CO2 emissions. In this study, the effect of FRs in improving the lubrication of PEEK-steel ...

Two quantitative structure-property relationship (QSPR) models of hindered phenolic antioxidants in lubricating oils were established to help guide the molecular structure design of antioxidants. Firstly, stepwise

regression (SWR) was used to filter out essential molecular descriptors without autocorrelation, including electronic, topological, spatial, and ...

Interfacial modification [25], [26] is an effective method to improve the compatibility between MOFs additives and base lubricating oil [27].Meanwhile, the surface functionality of Zr-MOFs can be easily tuned due to the presence of ligated unsaturated metal sites and tunable organic linkers [3].As a traditional anti-wear additive, zinc ...

The FTIR spectra was shown in Fig. 8 A. Lubricating base oil, a product of multistep fine refining of the relevant fractions from vacuum distillation of crude oil, was the main component of so-called mineral lubricating oils containing aliphatic and alicyclic substituted aromatic hydrocarbons, i.e., derivatives of benzene and biphenyl [55]. The ...

By comparing the energy storage modulus and flow transition index at different temperatures, it can be found that the addition of an appropriate amount of LDHs has an important effect on the oxidation resistance and viscoelasticity of the system.

These properties are especially crucial for multi-stage oils and energy-saving oils. Rust resistance. This refers to the specific physical and chemical properties of anti-rust grease. Its test methods include the humidity test, salt spray test, lamination test, water displacement test, as well as the shutter box test, long-term storage test ...

As the energy demand is increasing and conventional energy sources are declining, renewable energy sources are becoming increasingly popular. It is very important to store this energy efficiently. The use of phase change materials (PCMs) as latent heat thermal energy storage (LHTES) technology has utmost importance to researchers due to its high ...