
Editorial: Special Issue: Lubrication and Tribology Trends in EVs

Dear readers,

It is a particular pleasure to announce our new Special Issue on “Lubrication and Tribology Trends in EVs”.

With the progress of electrification in mobility, new tribological challenges arise nowadays keeping tribologists all over the world busy and excited. Holmberg and Erdemir found that a substantial 57% of the electrical energy in electric vehicles (EVs) is dedicated to overcoming friction losses (Holmberg and Erdemir, 2019). By minimizing energy loss caused by friction, we can significantly enhance energy efficiency and extend the driving range of EVs. Mechanical design directly reduces energy losses caused by air drag, rolling resistance, and braking dissipation. Additionally, proper lubrication is crucial for reducing frictional losses in the electric motor and transmission, which account for approximately 1% and 3% of the total losses, respectively. While lubricants used in traditional internal combustion engine vehicles can be adapted for use in EVs, it is important to consider the lubricant's electrochemical properties, corrosion resistance with copper, and interaction with

elastomers/polymers present in EVs. Moreover, the use of nano-additives such as TiO_2 and CuO presents an intriguing method to alter oil properties, making them more suitable for use in EVs (Shah *et al.*, 2021).

Within this special issue, colleagues will present their work on new efficient bio-lubricants, material perspectives on magnesium-ion batteries, and surface texturing as powerful tools to keep friction and wear under control.

Enjoy reading and best wishes from Vienna

Carsten Gachot

Carsten Gachot

*Institute for Engineering Design and Logistics Engineering,
Technische Universität Wien, Wien, Austria*

References

- Holmberg, K. and Erdemir, A. (2019), “The impact of tribology on energy use and CO_2 emission globally and in combustion engine and electric cars”, *Tribology International*, Vol. 135, pp. 389-396.
- Shah, R., Gashi, B., González-Poggini, S., Colet-Lagrange, M. and Rosenkranz, A. (2021), “Recent trends in batteries and lubricants for electric vehicles”, *Advances in Mechanical Engineering*, Vol. 13 No. 5, p. 16878140211021730, doi: [10.1177/16878140211021730](https://doi.org/10.1177/16878140211021730).

The current issue and full text archive of this journal is available on Emerald Insight at: <https://www.emerald.com/insight/0036-8792.htm>



Industrial Lubrication and Tribology
76/7/8 (2024) 873
© Emerald Publishing Limited [ISSN 0036-8792]
[DOI [10.1108/ILT-10-2024-552](https://doi.org/10.1108/ILT-10-2024-552)]

This paper forms part of a special section “Lubrication and Tribology Trends in EVs (EVtribo)”, guest edited by Carsten Gachot.