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LUBEST

Lubricants in the Scientific-Technical Heritage: preserve, remove or replace ?

OBJECTIVES

The LUBEST project aims to address a key challenge in the conservation of scientific and technical heritage: how to manage lubricants in functional and static objects, such as clocks, engines and instruments. While these substances are vital to the functioning of these objects, they can also cause corrosion and wear, even when not in operation, putting their preservation at risk. By combining conservation science, chemistry and tribology, the LUBEST project will provide museums and conservation professionals with evidence-based tools and protocols to ensure safer preservation and more informed decision-making.

PROGRAM

The main outcome of this study will be a better understanding of the physicochemical interactions between lubricants, ST object mechanisms, and the environment depending on whether the objects are to be preserved in static or in its working condition. To achieve this, the project will focus on :

- Identifying the most representative tribological systems and materials in ST museums
- Characterising new and used lubricants and their ageing behaviour
- Assessing corrosion, wear and their combined effects (tribocorrosion processes)
- Developing conservation protocols and the foundations of a collaborative database.

By combining mechanical and chemical tests with various analytical techniques, the project will clarify the role of lubricants in protection against corrosion and/or tribocorrosion, and the differences in risk under different operating conditions.

RESULTS

The results will contribute to the creation of a decision tree and practical guidelines for museum and conservation professionals. These will enable them to assess the risk of preserving their objects in different scenarios, as well as what to do with lubricants in each case. Core parameters will be defined to enable future data sharing and extrapolation to different collections and contexts.

Fig. : A lubricated plain bearing casing from the triple refractor of the Neuchâtel Observatory.
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FUNDING

Swiss National Science Foundation (SNSF), Swiss Postdoctoral Fellowship 2024.

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DURATION

24 months
01.01.2026 – 31.12.2027