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# DRYLU

## Testing solid lubricants for the conservation of scientific and technical heritage artefacts

Fig.: Lubricated anchor escapement from a tower bell clock (MIH collection) ©HE-Arc CR, A. Lefebvre 2024

### OBJECTIVES

The preservation of scientific, technical (S&T), and industrial heritage implies the consideration of the functionality of the objects as part of their historical and artistic value. Using lubricants, such as grease and oils, facilitates motion maintenance. Without these materials, wear and friction can occur, impacting the integrity of the moving parts, their functionality, and the preservation of the artefact in the long-term. Nevertheless, lubricants get consumed and altered overtime due to environmental factors or the interaction with the materials composing the moving mechanisms. Therefore, they are commonly replaced without further questioning regarding their durability in preserving S&T heritage.
The DRYLU project aims to propose solid lubricants (also called "dry lubricants") as an alternative to traditional lubricants for the conservation of scientific and technical heritage.

### PROGRAM

The dry lubricants' family is already successfully exploited in industry as it offers several advantages compared to their counterparts, including cleanliness, reduced maintenance, chemical stability, decreased wear, and environmental friendliness. Contrarily, few studies have explored the potentiality of dry lubricants on S&T heritage.

Yet, no long-term assessment was carried out, despite being an inevitable step to foster their implementation in the field of cultural heritage. In the DRYLU project, accelerated ageing tests are performed on model mechanisms under both static and dynamic conditions to explore the potential of dry lubricants.

The performance is validated by a multimodal analytical protocol. The exploratory research is developed in close collaboration with expert conservators, museums, and other institutions to verify if solid lubricants represent an advantage with respect to classic ones.

### RESULTS

S&T representative mechanisms and dry lubricants of interest are selected. Their performance in both static and dynamic settings is evaluated by several criteria, including chemical stability, reversibility, corrosion resistance, aesthetic impact, and compatibility with the object material. A protocol is proposed for their application on S&T collections in a future perspective.

### FUNDING

HES-SO, Réseau de Compétences Design et Arts visuels

### PROJECT TEAM

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### PARTNERS

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### DURATION

18 months
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