NEMOSINE:
An innovative storage solution for long term preservation of fragile material (a market prospective)

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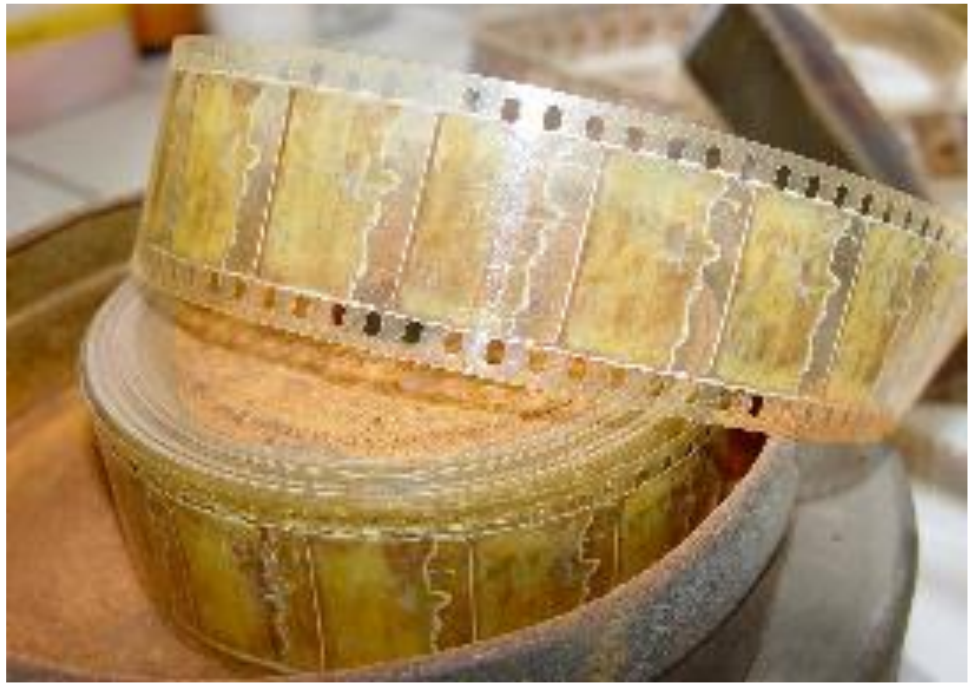
Agenda

- Why NEMOSINE?
- The real innovation
- The market needs
- An opportunity around the corner
- What's next?

Why Nemosine?

- **The context:**
  - A huge percentage of the recent European cultural heritage (CH) can be found in movies, photographs, posters and slides produced between 1895 to nowadays were made using cellulose derivatives.
  - The worldwide estimation of such holdings within professional film archives is around **18 Mio of film reels on cellulose acetate**, whereof ca. **5% are in a critical stage** or showing signs of *vinegar syndrome*.



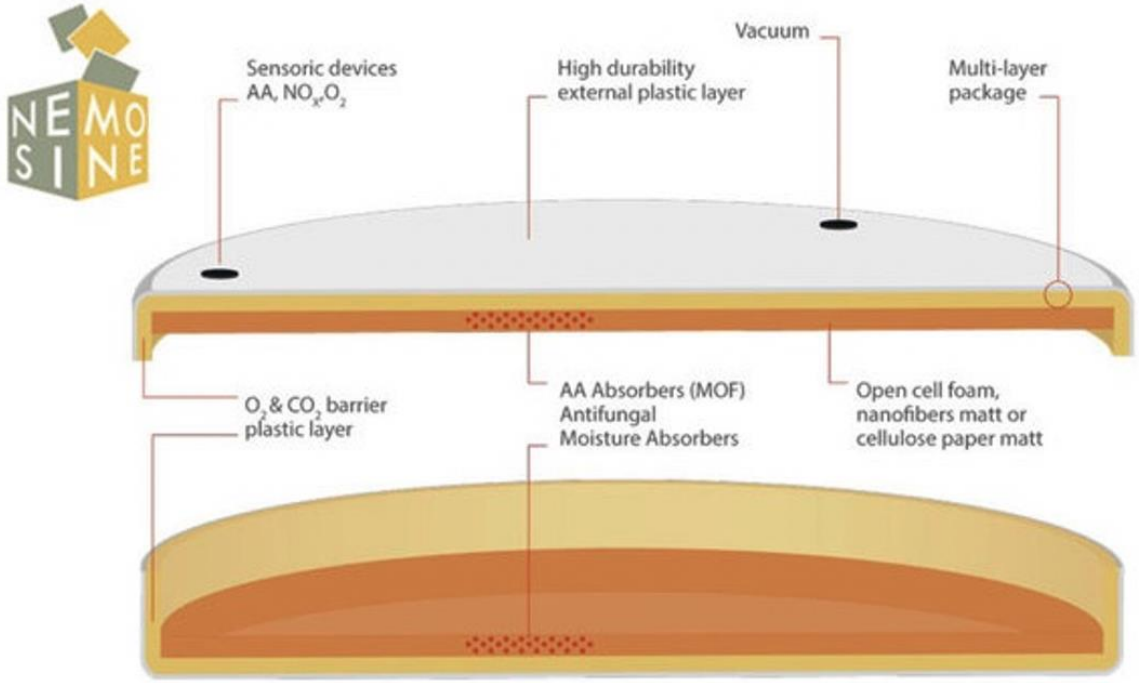
- The **Key Objectives:**
  - NEMOSINE aims to improve the traditional storage solutions, by developing **an innovative smart package** with the main goal of energy saving and extent conservation time of cultural objects based on cellulose derivatives.

The real innovation

- The smart package will have the following characteristics:
  - High O2 barrier and Active packaging using non-odor additives.
  - Active acid absorbers based on functionalized Metal Organic Framework (MOFs) integrated in low density and porous structures.
  - Gas detection sensors based on nanotechnology to monitoring AA, water, O2 & NO.
  - Multi-scale modelling to correlate degradation & sensors signals.
  - Packaging with modular design to fulfil the technical & economical requirements of the different CH made by cellulose derivatives.
  - Curative packages containing controlled release of natural antifungal additives.

Boxes structure

Nemosine - EU funded project



Market Needs:
Main preservation problems
Some early assumptions from internal studies

- From few hundreds to 100.000 reels of film
- Preservation around 8 degree 25%, up 16 degree 40%, over 16 degree 25 %
- Over 60 % keep RH below 40%
- Over 65% is safety film (acetate base), follow by safety film on polyester (20%) and nitrate (10%), other 5%
- Over 65% film contains also audio tracks
- Film protection kinds: metal, cardboard safety, plastic, archival quality kind
- Dimensions of boxes: less 17mm in height 70%, diameter less 35cm 20%, etc.
- Molecular sleeves (dessicant) are less used because expensive
- Most institution check only temperature (50%)

Conclusions and suggestions

- Films are well presented in the people interviewed
- Time and money to perform specific operations (ie temp and humidity control, put dissecants in the containers, better cold storage conditions, etc.) are some of the major issues that people facing
- Preservation boxes objective: we prefer packaging boxes that comply with international standards and that help in the preservation of films in the long term
- Most storage done between 8 to 16 degree Celsius. (lower degree is better!)
- 33 percent of interviewed claimed 40-50% RH storage conditions. This is too many. Aim more collections below 40% RH
- Similar issues related for photos, slides, images collections

An opportunity around the corner

- Japan, Wed, 29 Sep 2021 07:05:33 / Comserve Inc. / -- The industrial films market is projected to grow from USD 45.43 billion in 2017 to USD 55.73 billion by 2022, at a CAGR of 4.2% from 2017 to 2022.

- The conservation of small cinemas is also a relevant issue when films vanish into an increasingly saturated market. Access to films is indispensable for drawing a visual imaginary which is part of the nation as imagined community (Anderson 1983).

- As the international conversation increasingly turns towards the urgent issue of environmental preservation, we'll see an ever-growing demand for innovative graphics that communicate climatic and eco themes, and popular culture will have an impact on the design trends that consumers are drawn towards for packaging, branding, and websites.

What's next?

- NEMOSINE boxing preservation concept might be solution.

- NEMOSINE boxes could be build with some important key criteria:

1. Strong and robust for long stress due to a clever design;
2. Economically driven;
3. Built to meet the ISO and ANSI standards on preservation (including PAT certification);
4. Designed by people from the CH and preservation sector;

5. Unique sensors and solutions not available anywhere else in the market.

Thanks for your attention

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