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1 *The ARCHE system records valuable pictures and documents on color microfilms. This allows safe preserving for 500 years.*

LASER RECORDING SYSTEM FOR COLOR MICROFILM

LONG-TERM PRESERVATION OF DIGITAL COPIES

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Archivists and librarians are increasingly taking advantage of features related to the digitization of their precious cultural artefacts: digitization does not only reduce the tear and wear of originals, but also provides access to copies thereof for the general public, anytime and anywhere.
A problem yet unresolved is the long-term preservation of digital data. Conventional digital memory systems have to be copied or reformatted on new media at least every ten years. This procedure is time-consuming and requires high diligence to ensure the preservation of data for many years.

The color microfilm recording system ARCHE: Safe preserving for 500 years

With the color microfilm recording system ARCHE, Fraunhofer IPM provides archives, libraries, and publishers with a system for high-quality, fast and inexpensive long-term preservation. Red, green and blue lasers produce a true-color, highly resolved image with 160 millions of pixels in just fourty seconds. This amounts to over 2,000 images per day which are recorded on a 35 mm color microfilm. The durability of color microfilm is guaranteed for more than 500 years.

Database function

Before the actual recording process is started, the documents are equipped with additional metadata information, such as key words. These metadata not only enable a fast reconstruction of the data's structure, but also help to find a specific document or image easily.
Due to this data system, the color microfilm recording technology is of interest to anybody in need of safe high-quality long-term preservation of data.

2 *The ARCHE system records precious books of the courtesy of the Duchess Anna Amalia Library (Weimar, Germany) for long-term preservation.*

For the reliability of the color microfilm recording system, Fraunhofer IPM trusts in its experience and know-how gained through the ARRILASER. In 2012, this cine recorder was honored with Hollywood's »Academy Award of Merit« for its high technical standard.

Applications

The ARCHE system has proven its worth in the daily use at the Institute for Preservation of Archival and Library Material, a department of the Landesarchiv Baden-Württemberg. Interested parties from industry, culture and administration can use the service of the ARCHE color microfilm recording system at the companies Media de Lux and archium.

Microfilms have a broad range of application possibilities – not only for historical archives. More and more data are exclusively generated digitally. Design or accounting data often have to be preserved for a long time because of statutory provisions, among other things. Stored on forgery-proof microfilms, the data's authenticity is guaranteed. While digital data have to be migrated and reformatted in short intervals again and again, mircofilms can be stored safely and without any further treatment. This makes the costs for data retention not only exactly calculable, but also keeps them extremely low.

Specifications	
Image format	*32 × 45 mm (35 mm film)*
Pixel pitch	*3 µm*
Frame size	*10,666 × 15,000 pixel*
Film material	*Ilford color microfilm*
Recording time	*40 sec per frame*
Capacity	*540,000 frames / year (250 days)*
Film transport mechanism	*magazines up to 600 m (13,000 frames)*

Workflow of digitalization and recording on color microfilm