



Company Site HERRMANN und KRAEMER, Garmisch-Partenkirchen, Germany

**HERRMANN und KRAEMER: Modern microfilm technology
is still the first choice for long term archive storage.**

Secure preservation of data with no expiry date

The guiding principle for the safe preservation of irreplaceable documents is that there can be no compromises. Although digital storage media based on magnetic or optical processes still dominate the field of information processing throughout the world, they nevertheless have limitations for long term archive storage. By using the Archive Writer OP 500 microfilm photographic system from Zeutschel, the specialist imaging and archiving firm of HERRMANN und KRAEMER are employing a hybrid solution which combines modern digital technology with the extremely long life expectancy of microfilm.

Secure preservation of data with no expiry date



The range of documents to be stored for long – or even limitless – periods is large: they include centuries-old cultural assets such as deeds and official records as well as recent text, image and sound files. It is not just the preservation of documents in analogue form which is constantly gaining in importance in social, scientific, industrial and commercial fields but also the preservation of digital resources. Anyone who dispensed with the supposed old-fashioned medium of microfilm was possibly acting somewhat prematurely. As regards the long-term durability of digitally stored information there are still considerable limitations. The life expectancy of magnetic and optical storage media specified by the manufacturers which ranges from 10 to 100 years only applies where the limit values indicated in the specification, for example for the storage conditions, are adhered to precisely. These are ideal conditions which seldom occur in reality. Incorrectly set drives, for which important parameters such as the write current or laser intensity no longer comply with the standard norms, are encountered just as frequently in practice as non-compliance with the specified storage conditions such as temperature or humidity. Another criterion to be considered is the wear and tear which occurs. Optical media, which do not require any direct physical contact with the read/write unit when data are accessed, are placed under less stress than magnetic tapes. They are however shown to be more sensitive to mechanical or thermal stresses such as scratches, soiling, physical distortion or high temperatures. In addition to the availability of the relevant read/write systems, the type of data coding

employed is also an important factor. If data compression processes with error correction are employed, as are used for almost all media nowadays, the ability to read the information is entirely dependent on whether the relevant driver software for the control and operating systems will be available in the future. Permanent data migration really provides only an apparent escape from the dilemma. Firstly, the time required for this kind of operation is enormous and secondly, the costs incurred are often incalculable. In the final analysis data migration itself is not infrequently a potential cause of data loss.

Combining the digital and analogue “worlds” in a reliable way

According to current AIIM- (Association for Information and Image Management) and ANSI- (American National Standard Institute) standards, microfilms have a life expectancy of up to 500 years (Life Expectation LE 500). Archive Writer OP 500, developed by Zeutschel, can be seen as a bridge between digital and analogue archiving which have thus far existed only as separate solutions. Firstly, the user is placed in a position where s/he can transfer digital information to a durable long term analogue storage medium, and secondly, information currently stored on microfilm can in turn be returned to digital form if required by means of special microfilm scanners . This is a scheme which has been well received in many quarters, as Michael Luetgen, Managing Director of HERRMANN und KRAEMER, where the Zeutschel OP 500 has been in operation since the middle of 2007, reports: “In addition to leading European

About HERRMANN und KRAEMER

The professional imaging and archiving specialist, HERRMANN und KRAEMER, have made top quality reproduction of challenging documents the core focus of their business. This modern family business, which has over 50 years of experience, is one of the leaders in Europe in the field of photographic preservation of cultural assets and irreplaceable company documents. The company, which is based in Garmisch-Partenkirchen, provides a wide range of services to

libraries, archives, museums, universities and also industry and commerce. The spectrum of services provided ranges from digitisation and digital editing, microfilming and archiving to in-house hardware and software development. With its staff of 50, HERRMANN und KRAEMER provides its customers with expert advice and professional project management as well as organising seminars and workshops.



libraries, archives and museums, we are also noticing an increasing demand from professional photographic agencies. But industry and commerce are also having to confront the issue of long term archive storage.” Michael Luetgen has identified an important area of application currently for recording slide images (diapositives) on film. Both in museums and archives as well as photographic agencies large numbers of slides from the sixties and seventies are being stored, whose colours are in constant danger of fading. The high image quality achieved by the Zeutschel OP 500 has also made a very positive impression on established professionals such as Anneliese Lux, director of the media de lux agency. She was able to enlarge a 35 mm slide to A3 size, then to scan it at a resolution of 300 dpi, to transpose it onto microfilm, then to scan the microfilm and to print out the image again in its original A3 size – and with almost no visible loss of image quality. Long term archive storage of text documents is more concerned with the highest level of data security than the best possible colour reproduction. Firstly due to the increasingly stringent legal requirements but also for preserving their own long term interests, more and more industrial and commercial companies are having recourse to microfilming. Not just legally relevant or historically valuable records but also highly sensitive documents such as construction drawings and patents are being stored on microfilm for the purposes of preserving evidence. The customers of HERRMANN und KRAEMER not only include well-known automobile manufacturers but also famous names from the pharmaceutical industry.



The Zeutschel OP 500 combines modern digital technology and long-term preservation

Innovation and tradition in combination

The Zeutschel Archive Writer OP 500 does not only contain high quality optical components, the unit is also equipped with the most up-to-date semiconductor technology. It works according to the principle of “display exposure”, where the document to be recorded is displayed on a high resolution 9 megapixel TFT monitor and is then “photographed” from it. In order to further increase the image resolution – in concrete terms up to 81 million pixels – a 9-fold multishot process is employed. For this process the pixels on the TFT display are reduced to a ninth of their size by means of a chrome on glass mask. Nine partial images are formed by repeatedly shifting the virtual imaging exposure process. The nine partial images when woven together produce the desired complete high resolution image. The Archive Writer OP 500 has been designed for copying 16 mm and 35 mm film rolls. Silver halide microfilm is normally used for recording data in black and white or grey-scale, whereas high resolution ILFORD MICROGRAPHIC film for long term archive storage is the ideal solution for colour exposures. Each frame has 7,200 x 11,520 pixels. If the resolution requirements are lower, e.g. for text documents, several images can be captured on one frame by using the nesting

process. This also provides a cost saving. There is an option to record file names and other automatically generated metadata below each image. A blip can be exposed for each frame on the edge of the film as a positioning aid for subsequent re-digitisation. An index register listing all the images stored on the film can also be included at the start and finish to facilitate retrieval. The system can record up to 1,200 image per hour on the microfilm. The Archive Writer OP 500 supports a colour depth of 36 bit RGB and the colour quality is guaranteed by the inclusion of ICC (International Color Consortium) colour management.



Microfilm despite changing times

The Archive Writer OP 500 is controlled by exposure software developed in-house by Zeutschel. This features image editing options and other functionalities normally associated with CD/DVD burner software so that the user can specify the widest possible range of different exposure workflows. In addition to digitised data, i.e. scanned documents and images in the standards image formats such as TIFF, JPG, BMP, GIF, etc., the system also supports the capture of data originally created in digital form, such as CAD, WORD or EXCEL files. In close collaboration with HERRMANN und KRAEMER, software to meet the special requirements of service providers and adjustments to the colour film were optimised. As Michael Luetgen explains: "Long term archiving is becoming more and more important not least due to the increased use of electronic signatures which can be used as conclusive evidence." This is a development which Zeutschel has taken into account regard-

ing Archive Writer OP 500 with the inclusion of a facility to change the format of documents. A software tool converts file formats such as .doc or .xls into a PDF/A format specially developed by Adobe for long term archive storage thus ensuring that formatting and signature information can be recorded on the microfilm as well as just text. In view of the fact that the internet is becoming a global communication network, Zeutschel is currently working with a German university as part of a joint project to develop a similar solution for the XML format normally used for internet applications. According to Michael Luetgen it is not just digital technology which is constantly developing but also microfilm technology. "By deciding in favour of a hybrid solution, which combines the long term archiving durability of microfilm with the fast, interactive access to digital data if required, institutions and companies are not only make a safe choice but also a safe investment."

The Zeutschel Archive Writer OP 500

With the ArchiveWriter OP 500, digital data can be stored easily and quickly on microfilm. The system supports all digitally created or digital data (CAD, E-Mail, Word, Excel, JPG, TIFF, BMP, PDF ...) and converts it on a safe, durable analog long-term storage media. Thereby the OP 500 processes up to 1.200 pictures per hour – with a resolution of max. 81 Mio. Pixel. The exposure of up to 600 m rollfilm (16 mm or 35 mm) can be made in b&w, half tone or color. The color quality (36-Bit RGB) will be guaranteed by an integrated ICC color management system. Due to the comprehensive options for the image processing and the possibility of exposing the meta data at the image border, the OP 500 fulfills all requirements applied to long-term archiving.



Zeutschel – The Future of the Past

Zeutschel GmbH, based in Hirschau near Tübingen, is a well-known specialist company working in the area of the preservation of cultural assets and has been a supplier of equipment, solutions and systems for the management of documents and archives for over 40 years. Employing over 60 staff, Zeutschel develops, produces and distributes scanners, capture software, microfilm cameras, hybrid systems and readers. Zeutschel systems and solutions are used by libraries, archives, universities, land registries and commercial companies all over the world.



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