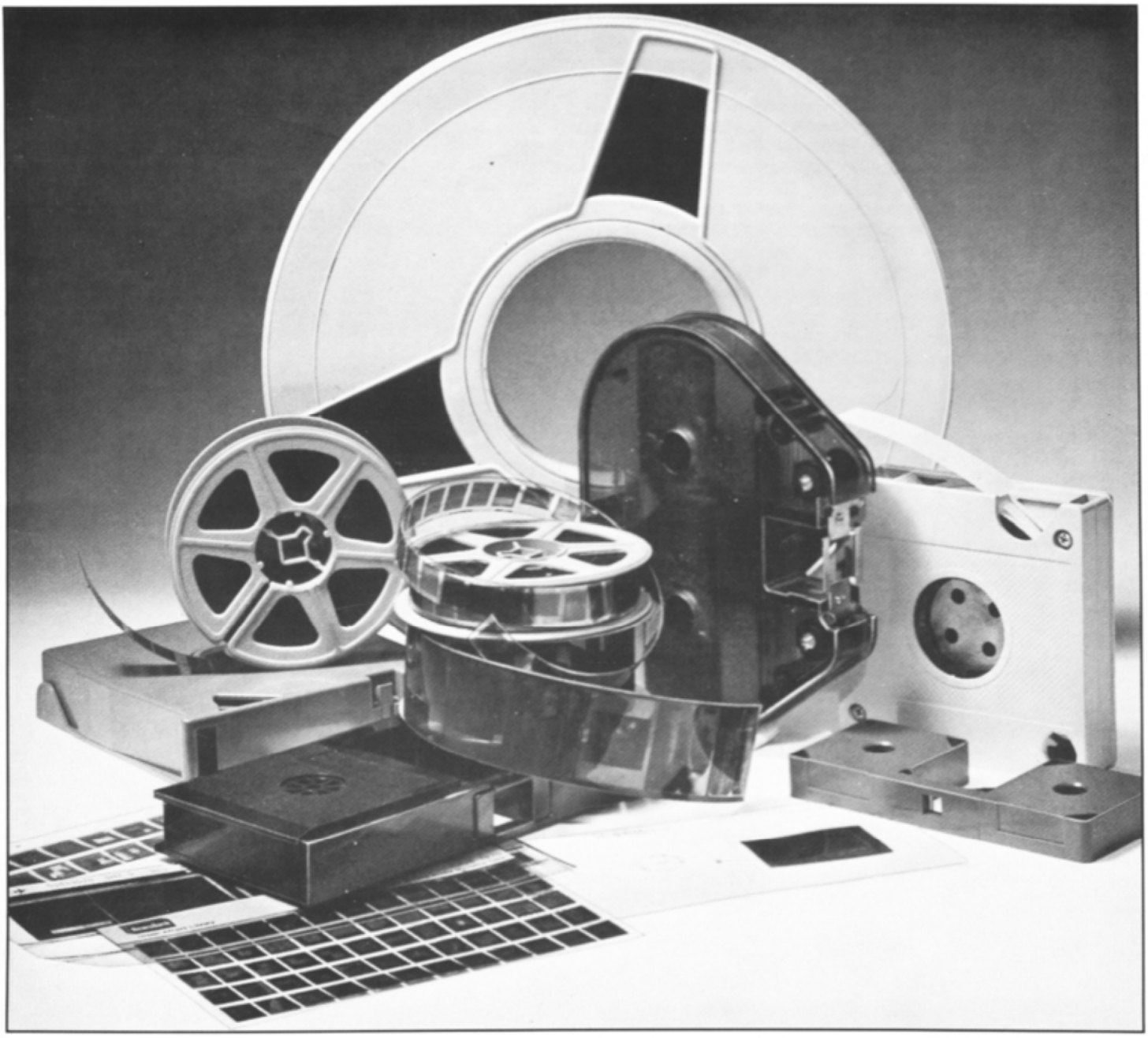
ALL ABOUT MICROGRAPHICS



Dedicated to all Information Industry Professionals by:

ALTEK SYSTEMS

An Allied Technology Company

INTRODUCTION

All About Micrographics **is a quick, easy-to-understand reference primer. This publication covers all aspects of microfilm production, storage, access, retrieval, dissemination and security.**

Documents, reports, journals, newsletters, correspondence produced by typewriters, computers, facsimile machines and even by hand are being created and duplicated in unprecedented volumes.

Consider the bulk of paper documents in every office today, whether it be in industry, an academic institution or a government office. To get at the information in this form, pages have to be leafed through, heavy volumes must be removed from shelves or file drawers . . . to disseminate information in this form means carrying, mailing, trucking or otherwise transporting bulky, cumbersome material at appreciable effort and expense. To store and retrieve information in this form means considerable expenditures of personnel and space, both of which are expensive. More importantly paper is most often the bottleneck of an organization causing delays in conducting business, poor customer service, losing out to competition and even lost revenue and profit.

It does present a problem. We've all become so dependent on paper that it is part of our everyday lives both at work and at home. Paychecks, bills, reports, medical records, charge account files, correspondence, technical data and virtually every type of information we need is on paper. Computers have solved a lot of information problems for us . . . but along the way they've created some new ones! Computers produce a great deal of paper that we must process.

Fortunately, new methods and systems have been developed to solve the document bottleneck dilemma . . . one of these systems is micrographics.

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BENEFITS OF MICROGRAPHICS

Very few people want to use microfilm. Old traditions die hard and paper has many advantages that microfilm is unable to offer. There are, however, many benefits that microfilm offers over paper which therefore justifies the employment of micrographic systems.

The following are the prime reasons for the wide popularity of micrographics today:

- **Incomplete or out-of-date records** are often the source of serious errors and consequent customer complaints, lost time and increased costs. With the appropriate microform and system the problem of lost or misfiled documents can be totally eliminated.
- **Reduction In bulk** and saving of space achieved by microfilming documents enables files to be located where they are needed, instead of where they will cost as little as possible to accommodate - such as the basement.
- File **Uniformity -** each microform is produced to a standard format which eliminates the handling of many different sizes of documents.
- **Reduced distribution costs,** since microfilm is usually only 2% of the weight of the paper documents from which it is made - this enables first class and airmail instead of parcel post to be used.

- **Rapid updating -** microforms reduce updating delays. Instead of having dozens of pages to file when updated material is received, only one or two microfiche need to be slipped into the file.
- **Security** can be provided by storing a duplicate copy at a remote location. Paper files in constant use soon become dirty and dog-eared, microfilm is more durable than paper and can be protected by use of cartridges. Individual documents can be removed from paper files and the loss may not be discovered for a long time. It is almost impossible to remove one page from most micrographic systems.

- **Quicker dissemination -** turn around time to prepare and disseminate information on microforms instead of paper can put the material in the hands of the user much faster.
- **Customer service improved** by having records available faster through automated retrieval techniques and having the files closer to the user with fingertip accessibility.
- **Duplicates available faster and at lower cost.** In view of these features multiple files can be made available where only one paper file existed, thus providing convenience and multiple access.

MICROFORMS AND FILM TYPES

MIcroforms

The term *microform* is generic for any microfilm size or format. The following is a description of the various microforms and an indication of the advantages and disadvantages of each.

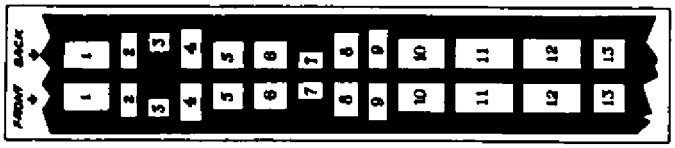
Roll Film

Roll film is a length of processed microfilm on a reel or in a cartridge. Rol microfilm is 16mm or 35mm wide.

Roll microfilm is produced in three formats for arranging the images: (1) the simplex-comic orientation, where a single line of images are lined up side by side, like a comic strip; (2) the simplex-cine orientation, where a single line of images is continuous, lice motion-picture film; and (3) the duplex mode, where the front and back of a document appear side by side, forming two channels of Images down the length of the film.

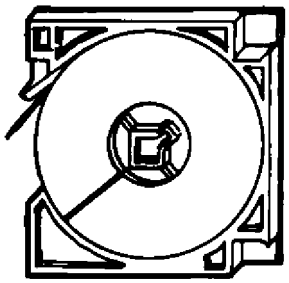
SIMPLEX-COMIC ORIENTATION

SIMPLEX-CINE ORIENTATION



DUPLEX ORIENTATION

Reels are flanged plastic holders for processed roll microfilm. Cartridges are plastic enclosures that protect the film and simplify inserting the film into readers, reader-printers and retrieval devices.



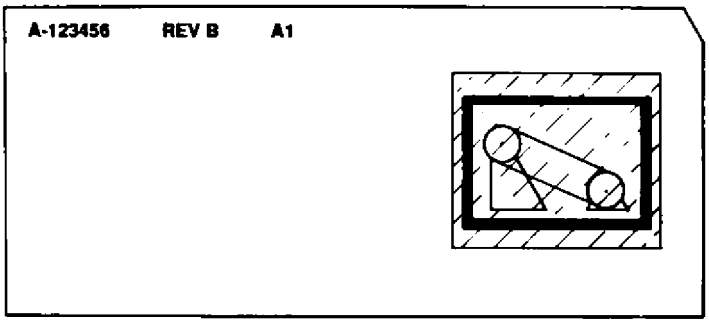
STANDARD CARTRIDGE

Roll microfilm is the least expensive to produce, provides excellent packing density, and depending on the indexing, retrieval can be quite fast for locating information. It is easy to produce hardcopy from roll microfilm and roll film provides outstanding file integrity. The shortcomings of roll film are the inability to update the information easily and it cannot be duplicated by the user.

Aperture Cards

An aperture card is a card with a rectangular hole specifically prepared for the mounting or insertion of a chip of microfilm. The standard size of an aperture card is tab card size, 3-1/4" x 7-3/8'. The standard aperture accommodates a 35mm x 2" chip of film containing one frame (one image). the film may be held in place by either pressure-sensitive tape or by insertion into a transparent *sleeve.*

The cost of aperture cards is reasonable, packing density is good, and the ease of updating and retrieval is excellent. The aperture card can be duplicated and hardcopy produced very easily.

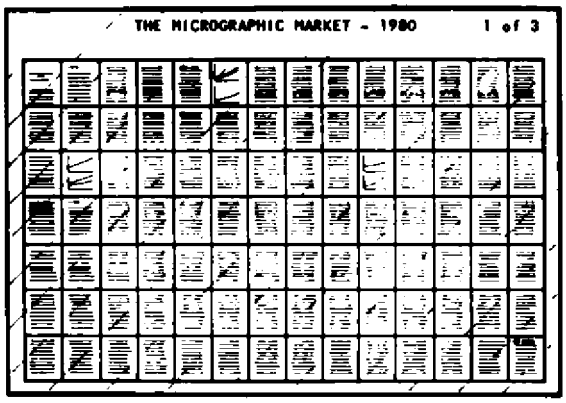


APERTURE CARD

Microfiche

Microfiche is a sheet of microfilm containing multiple images in a grid pattern. The standard size for microfiche is the international "A6," 105 x 148mm (approximately 4 by 6 inches). For microfilming source documents, the most common format is 7 rows by 14 columns, providing 98 frames, which is usually produced at a 24X reduction. For computer output microfilm, the standard format is 15 rows and 18 columns providing 270 frames of the equivalent 11 by 14 inch document at a reduction of 48X. Regardless of size of format, microfiche contains an eye-readable heading that identifies the contents. The heading area may be color-coded to aid retrieval.

The cost of microfiche is good; packing density and ease of updating is good. Retrieval of fiche is excellent, as is the ability to duplicate and make hardcopy. The capability of reproducing hundreds of images quickly, simultaneously and at low cost by duplicating a single fiche is very important. File integrity can be a problem. There are "updatable" microfiche systems in which images can be subsequently added to a master fiche.

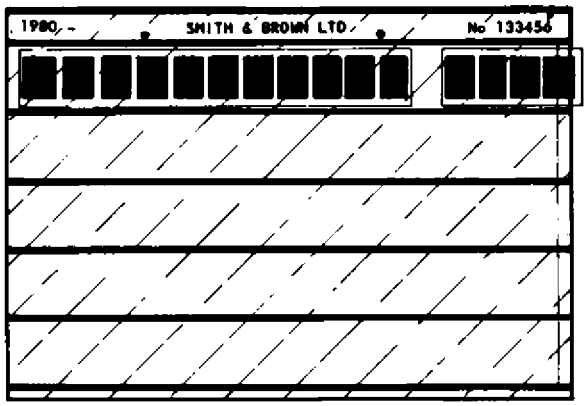


MICROFICHE

Jackets

A jacket is simply a transparent plastic carrier with multiple sleeves made to hold strips of microfilm cut from rolls. Jackets may contain 16mm film, 35mm film, or both. Jackets are usually tab size or 4 by 6 inches (105 by 148mm). Jackets, like fiche, have eye-readable headings which may be color-coded and/or notched to aid retrieval. Duplicates of jackets look like microfiche.

The cost of producing jackets is fair, the packing density is good and retrieval is excellent. Jackets can be updated by removing and/or adding selected strips of film. Hardcopy and duplicates are produced the same way as from fiche. There is much manual labor involved in producing and updating jackets.



15 own JACKET

The Film In Microfilm

Obviously; one of the most important components of a micrographic system is the film itself, although only a supply item. Film is used for two functions in the system: (1) for recording by a camera; and (2) as the duplicating medium for distribution copies. Microfilm may be duplicated through several generations and both the camera film and the duplicates may have either positive- or negative-appearing images. The polarity of microfilm is determined by its appearance and not by what it is made from. Most business documents are dark text on a light background, exactly like this page. This is a positive appearing Image. A negative-appearing image is just the opposite-light text on a dark background.

There are seven different types of microfilm which fall into three categories, as follows:

Camera films

1. **Silver-gelatin**
2. **Dry silver**
3. **Transparent photoconductor (TPC)**

Duplicating-Reversing

4. **Silver-gelatin**
5. **Vesicular**

Duplicating-Nonreversing

6. **Silver-gelatin direct duplicating**
7. **Diazo**

Sliver-gelatin *camera* film may have a positive or a negative image, depending on how it is processed. Dry silver film produces a negative image. Transparent photoconductor films produce positive images. The reversing duplicating films produce a positive image from a negative or a negative from a positive. Nonreversing duplicating films produce negatives from negatives and positives from positives.

Silver-gelatin film is film that is coated with a silver-halide emulsion. Silver-gelatin film is both a camera film and a duplicating film.

Dry sliver film is a nongelatin silver camera film that is exposed by light and is developed by application of heat.

Transparent photoconductor film is a camera film that includes a photoconductive layer which, in combination with a special electrostatic image system, permits the adding of new images or overprinting existing images onto an existing photoconductor film.

Vesicular film is a duplicating film in which the light-sensitive component is suspended in a plastic layer. On exposure to ultraviolet energy, the component creates optical vesicle (bubbles) in the layer. These imperfections form the latent image. The latent image becomes visible and permanent by heating the plastic layer and then allowing it to cool. Duplicating with vesicular film may be done in an ordinary room.

Silver-gelatin direct duplicating film has the same makeup and properties as those described for silver-gelatin film.

Diazo film is a duplicating film, sensitized by means of diazonium salts, which, after exposure to ultraviolet light and after development by ammonia, forms an image. Duplicating with diazo film may be done in an ordinary room.

Sensitized Layer and Base

Microfilm can be broken down into two components: (1) the support, usually referred to as the base; and (2) the sensitized layer. Microfilm relies exclusively on acetate and polyester bases; both are classified as safety films—that is, they will not support combustion.

Filming

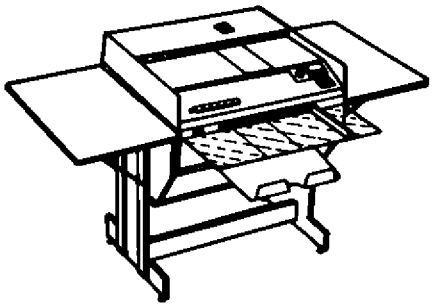
There are a variety of cameras designed specifically for microfilming, but all fall into one of two basic classifications: *planetary* and *rotary.* With a planetary camera, the material to be filmed is laid out on a flat plane; whereas with a rotary camera, the material is filmed while in motion. The latter uses a precision mechanical feed arrangement to continuously photograph the document through a narrow slit while both document and film are in synchronous motion.

The planetary camera is usually arranged with the camera head (containing the lens, shutter, film chamber and advance mechanism) looking down on a horizontal copyboard, on which are laid the documents to be filmed. It includes strategically placed lights for document illumination and may include vertical adjustments for the camera head to enable filming at various reductions.

Because of the possible effects of vibration and the use of mechanical synchronization In rotary cameras, image resolution is generally inferior to that of planetary cameras, although usually adequate for the types of material for which rotaries are intended (checks, business correspondence. etc.). The output of rotary cameras is normally 16 mm roll film.

Planetary cameras vary widely in design and complexity. These cameras may use 16 mm, 35 mm or 105 mm film for microfiche creation. Some planetary cameras are capable of automatically positioning the sequential exposures in grid format on the film for fiche production *(step-and-repeat cameras),* and others have a built-in film-processing capability (camera-processors). The output of the basic planetary camera is roll film. Camera-processors may output finished unit microforms, such as aperture cards, microfiche or strips. Some planetary cameras are automated with light meters automatically adjusting the illumination, feeding the documents, turning pages over and changing the reduction for different size documents.

The most sophisticated filming device used in micrographic systems today is the computer output microfilmer (COM), which includes a microfilm camera as just one component of its total make-up. A COM recorder creates microimages electronically on film from digital data from magnetic tape or directly from the computer without paper documents ever being produced.



ROTARY CAMERA

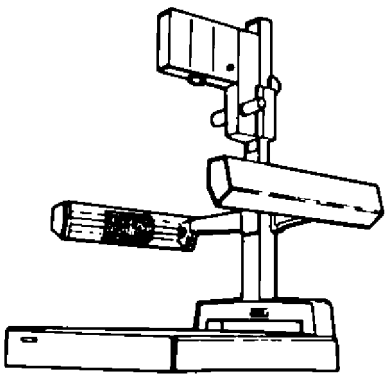
Processing

Except in the case of a camera-processor, the next separate step in the production of microforms is film processing. Since we are generally dealing with silver-halide film, as in ordinary photography, the usual processing techniques and chemistry apply. Obviously, the specific "bath" recipes and timings will depend on film emulsion specifications. Other parameters, such as thoroughness of washing and stability of water temperatures, will be dictated by the system's end quality requirements.

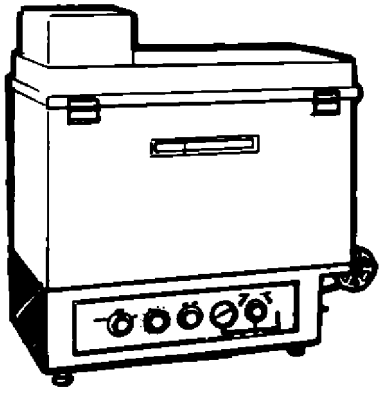
Currently, the only exception to the need for chemical processing, either separately or within a camera-processor, is the use of heat-processed films. COM devices and source-document cameras designed for use of heat-processed dry-*Over* films eliminate the need for wet processing.

Processing is the production step most likely to be handled by an outside service bureau. However, completely automatic processors, some compact enough for use in an office environment, are available from a number of vendors.

It is Important to recognize that in-house film processing entails more than just the purchase of a machine to do the job. Special plumbing may be required, which, in turn, will usually involve compliance with local waste disposal ordinances. There is also the continuing need to replenish and refresh processing chemical and to keep a close watch on the quality of the processed Images.



PLANETARY CAMERA



OFFICE-TYPE PROCESSOR

The purpose of this section is to provide an overview of the general types of microform readers and reader-printers available. It is not the function of this publication to recommend any particular manufacturer's equipment.

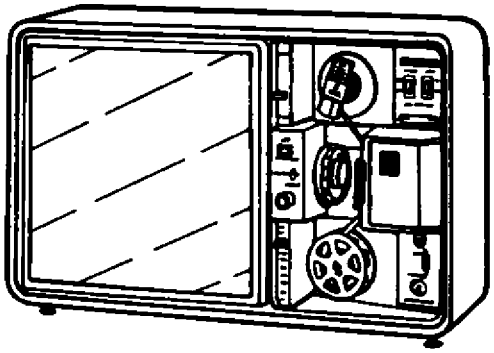
In general, readers and reader-printers are designed to accommodate one specific microform. If you are going to use microfiche, for example, you can immediately eliminate from consideration any reader that does not accept microfiche. Similarly, if your system is to be based upon 16mm film in cartridges, you can make a selection from the available cartridge readers.

There is a broad range of microform readers available, and they fall into two general categories: (1) stationary models, and (2) portable units. Each of these categories can be further broken down into such sub-categories as floor models, desk-top consoles, desk-top portables, lap-type portables and hand viewers. Some readers are designed for a specific application, while others are designed for certain applications such as engineering drawings, library use or computer output microfilm.

Once the question of basic reader type has been resolved, you must consider how many readers will be required for your micrographic program. You should have one reader for each area where microfilmed records are stored or will be referenced. Applications and anticipated user demand determine the number of readers to be acquired to suit the program.

Stationary Readers

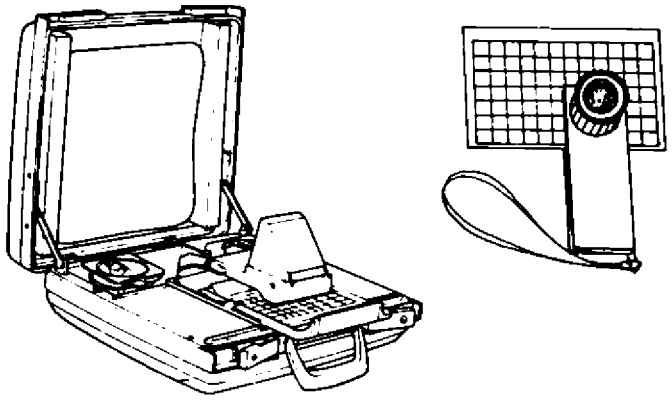
Choosing between a portable and a desk-top reader is somewhat like deciding between a compact or a full-sized car. Aside from portability, the essential difference between portables and desk-top units will be found in the features of the machines. Desk-top microfilm readers are generally larger, providing a greater image viewing area, perhaps a greater versatility of accepted formats, and a wider choice of operational features. Stationary readers are generally of more rugged construction than portables and are therefore more ideally suited to institutional use where demand is heavy. Some of the stationary models are supplied complete with stand.



Portable Readers

In selecting a portable reader, the prospective user should consider its primary application. If for example, there will be requirement for mobile reference such as in a car, an outside job site, or in a service van, a lap-type portable reader offering two-way power (standard 115 VAC and 12 VDC) will be necessary. If reference will be at various locations inside the building where only standard current Is required, a larger portable can be selected, one which may offer more operational features or a larger viewing screen.

The concept of a "personal portable" for the service representative, executive, or student to use in the office, at home, or on the road, has become increasingly popular in recent years, and has been a major factor in the proliferation of lap-type units and compacts with smaller viewing screens.



Specific Applications

There are a number of readers designed for specific applications. Some of these applications include reading of Computer Output Microfilm (COM), newspaper reference, hand viewing, projection viewing or for use at reader work stations. In many instances, the viewing screen on any of these units must conform to the size format of the original document. Thus a COM reader is designed with a horizontal 11" x 14" screen, a newspaper with the extra-large 20" x 20" screen, and a reader for architectural renderings or engineering drawings will offer viewing capability as large as 18"x 24".

Features

Specific operating features in a microform reader vary from manufacturer to manufacturer and prices range from under $100 for a hand viewer to several thousand dollars for a reader-printer. A feature that may be of critical importance to one user may be of little or no value to another.

We will now outline the features of readers that should be considered in the selection process. Most of the features discussed concerning readers are also applicable to reader-printers.

Optical System

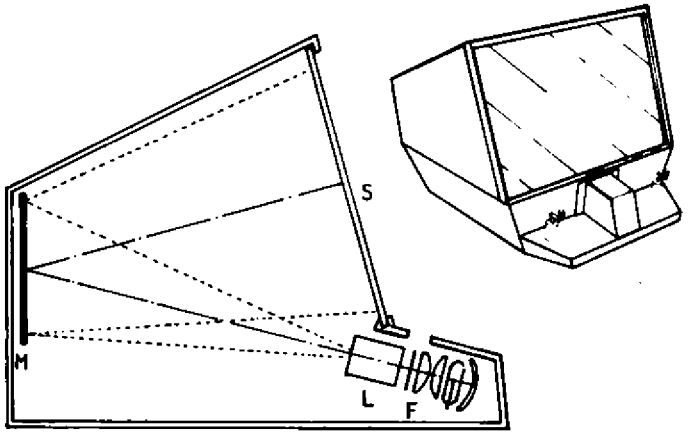
The optical system is the means by which the microform image is enlarged to human-readable size. In this respect, the type of material and the use to which enlargements will be put affect the magnification choice. For example, newspaper stock exchange listings on microfilm could not be read if they were only brought back to half the original size, since the original size is so small and condensed. On the other hand, it may only be necessary to bring an engineering drawing back to half the original size to provide satisfactory readability for reference purposes.

Another consideration is the type of optical system, whether it's (1) interchangeable, (2) dual magnifications, or (3) variable magnification. In the first instance, the lens system may be easily changed in the field by removing one lens and dropping another of a different magnification value in its place. The second, or dual, system employs a lever or similar mechanism to rotate from one lens magnification to another. in applications where there will be public use of reader or reader-printer frailities - such as a library - the dual or variable magnification systems are best, since and interchangaeabale lens can easily be removed by the user. The variable system usually utilizes a zoom lens to achieve a continuous* variable magnification. If your application involves microforms with a variety of reductions or requires zeroing-in on a particular portion of an images, the ease and degree on interchangeability or variation will be of prime importance in reader selection.

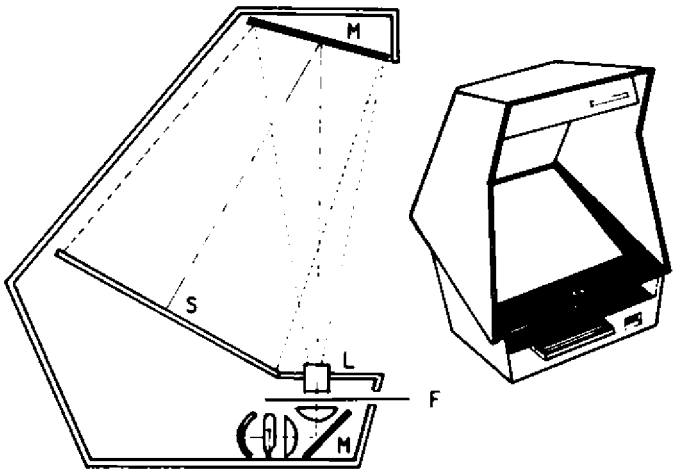
Projection Screen

Microform readers display the image on a screen, either by front or rear projection.

The size of the screen is one of the most important considerations in selecting a microfilm reader. Some applications require the screen size to be large enough to display the entire image in its original size. In other applications, half page or partial page display is possible - such as for viewing newspapers and engineering drawings.



REAR PROJECTION READER



FRONT PROJECTION READER

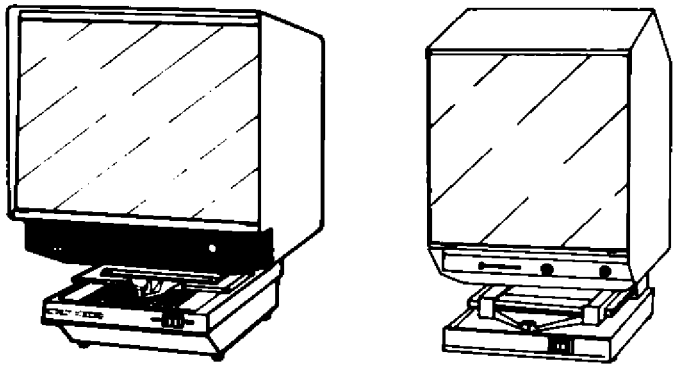


Image Rotation

If all image orientation in your micrograpnic program is in the same direction, image rotation may not be a requirement. But if your program includes different types of documents - some vertical reading, some horizontal reading - image rotation is of paramount importance. In roll microfilm, images may be photographed in comic (side-by-side as in a comic strip) format or in cine (each image is placed under another as in a movie) format. If you have both formats, your reader should be able to accommodate both cine and comic orientations.

Browsing & Scanning

Many microfilm users have a need for *scanning" by beefily viewing selected portions of a microimage enlargement or total image of large documents presented at less than full size.

"Browsing" is the procedure used to locate specific microimages on roll microfilm or in unitized microforms such as microfiche or jackets. Some readrs offer a manual method for browsing while others provide motorized browsing systems which can be set to the user's desired reading speed.

If browsing or scanning will be important factors in your micrographic program, you will certainly want to select a reader or reader-printer which features convenient controls and one that can be operated with equal facility by either a left-handed or right-handed person. Meters or frame locators for finding images on the microform are also essential to facilitate scanning and document location especially if quick retrieval is a requirement.

Lamp

You should receive information on the lamp's life expectancy rating prior to buying the unit. Since the lamp in any projection unit has a specified lifetime, an may therefore be subject to frequent changes, the units should be designed to permit fast, easy replacements.

Cooling

Projection lamps generate heat as well as light. For this reason, readers should have some method of removing excess heat. Larger units employ blowers, while many small readers can utiltize convection cooling. Reader design should incorporate ample protection from heat for both the user and the film. The blower should be quiet to eliminate unnecessary distraction to the user.

Film Handling

The film carrier or guide serves a dual protection function. First, it helps prevent scratching of the microform while it is in the machine, and second, it reduces heat on the film which could cause damage.

Image Access

It may be important to have an image access system incorporated into the reader or reader-printer for locating images on the microform. Most roll film units employ digital address to allow the user to go directly to a specific document or page. Unitized formats require an X-Y coordinate accessing system. in this type of system the horizontal rows of images are referred to by letter and the vertical columns of images are referred to by number. Image search methods can be manual or automated, depending upon the specific program.

Roll Film Indexing

The speed with which you can access specific microimages in the roll format is a function of the reader and the indexing code marks provided on the film. Some of the more common roll film index methods are: Flash card or flash target: a distinctive image used to separate file segments or sets of pages. However, for more efficient retrieval of film coded to a given page or groups of pages, the readers and reader-printers need to be equipped to "read* blip coding. Accordingly, the user will need to consider the coding or index method which will be used before making an equipment selection.

Power

Most readers and reader-printers operate on standard 115 VAC, 60 Hz If you're going to be using a portable reader in the field, you will want to be sure to select one which can be operated from a battery pack, or powered by the vehicle's electrical system.

Maintenance

The manufacturer should provide a checklist for regular maintenance which should be followed by staff members. As with any piece of equipment, your reader will only function consistently if it is properly maintained.

Reader-Printers, Specifically

Over the years reader-printers have used many reproduction processes paralleling office copiers. Today, plain paper reader-printers are readily available.

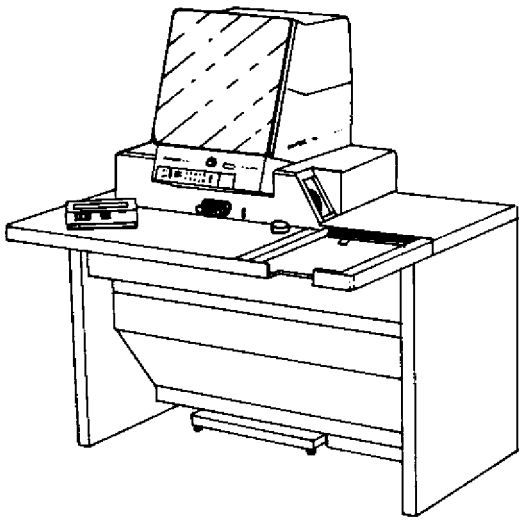


Image Polarity

Generally, we want positive prints (black image on a white background). If your microfilm is positive you will need a sign-maintaining reproduction process and if your microfilm is negative (clear image on a black background) you will need a sign reversing reproduction process. There are some reader-printers that are bi-modal.

A Final Word

Many individual readers and reader-printers offer features which will be of greater or lesser importance to your specific micrographic program. The best advice is to carefully evaluate the many units available with regard to these features and in terms of your particular needs and budget.

DUPLICATORS

Duplicate microforms are required for various reasons. The working file of a micrographic system may consist entirely of duplicates, particularly when it is one of several branch files having the same content. Even in systems having only a single working file, it may consist of duplicates, because the master microforms may be required to be stored in a security vault.

In many systems, expendable duplicates are produced on demand at the file for point-of-use reference — at a users desk, for example.

Duplication of microforms normally involves using films intended strictly for copying purposes and is usually a *contact* process, i.e., exposure takes place with the master microform in direct physical contact with the copy film. One popular type of copy film is *diazo,* which is developed by ammonia gas. Another is *vesicular* film, which is developed by heat. In diazo film, images are developed by the formation of a dye when the unexposed salts are attacked by ammonia. Vesicular images are formed by the production of microscopic nitrogen bubbles (vesicles) in the temporarily heat-softened emulsion.

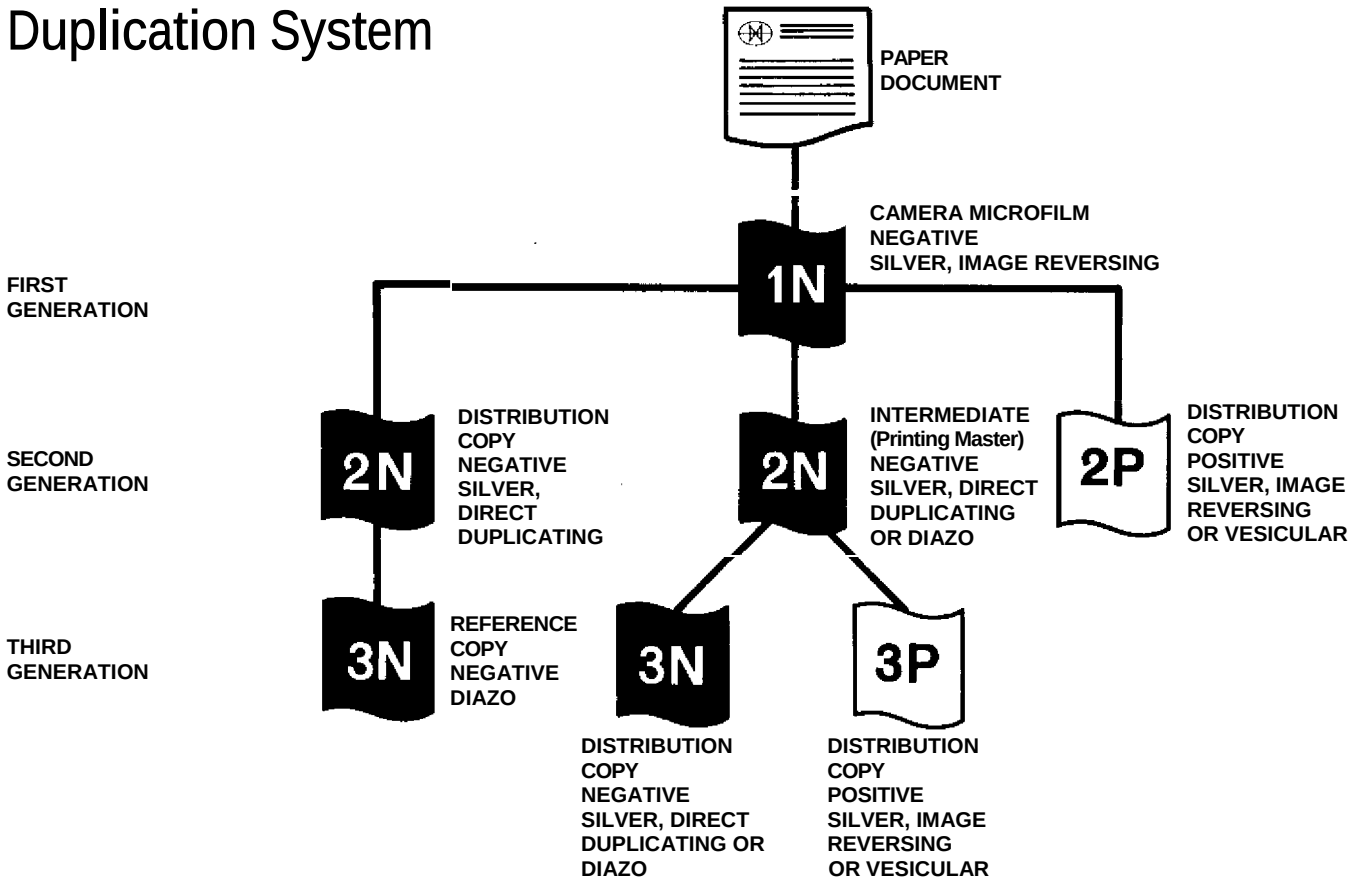
Silver-halide film is also used for contact duplication, but primarily in micropublishing, in which comparatively large volumes of high-quality duplicates are required. Silver duplicates naturally require the same chemical processing as the camera masters, which is the main reason that more convenient, nonsilver copy films are favored in relatively low-volume duplication situations.

Microfilm may be duplicated through several generations, and both the camera microfilm and duplicates may have either positive or negative-appearing images in any generation. The polarity of microfilm is determined by its appearance and not by what it was made from. The user's system and application should determine the number of generations required and the polarity of the distribution and user copy.

A simple system for identifying generation and polarity is recommended: Use two characters, a number for generation, and the letters "P" and "N" for polarity. First generation negative-appearing microfilm is designated 1N, and second generation positive-appearing microfilm is designated 2P, etc.

There are duplicators for every type of microform. They vary in duplicating volume and in degree of automation, depending on whether they are designed for *production* or *demand* duplicating configurations. The latter are relatively compact and are designed for use in an office environment. At the other extreme are "intelligent duplicators" that can be programmed to automatically produce different quantities of duplicates from different masters and to collate the duplicates into sets for distribution.

Duplication System



QUALITY CONTROL

Quality control is a most important aspect of micrographics with the objective being to achieve a consistently high grade product. Every micrographic operation should utilize some quality controls in the production of microforms. The following are the major items of concern:

Image Verification

it is important to be sure each page of each document has actually been filmed and that the image on microfilm has not been impaired in some way; i.e., double or folded image. The images on film may be randomly sampled, each image may be visually inspected in a reader, the microimages may be counted and compared against the number of pages that were to be filmed or each page may be individually compared with each microimage. To what degree this inspection is carried out depends on a basic "risk and consequence" decision.

Residual Thlosulphate (hypo)

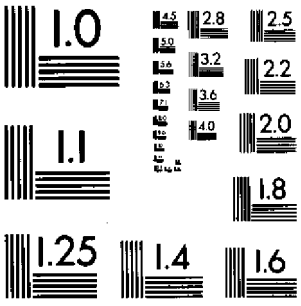
The purpose of measuring the level of residual thiosulphate on the microfilm is to test the effectiveness of the final wash on chemically processed silver film. It too much thiosulphate (hypo) remains on the film, it can in time, adversely affect the microimages. There are American National Standards providing the permitted levels of residual thiosulphate and the method of test.

Background Density

Background density is the degree of opacity, darkness of the background of negative polarity film. This test is made with a densitometer. Test results for source document microfilm should range between 0.9 and 1.3 depending upon the type of original documents.

Resolution

Resolution is the ability of optical systems and photomaterials to render visible fine detail of an object; a measure of sharpness of *n* image, expressed as the number of lines per millimeter discernible in an image. Resolution in processed microfilm is a function of film emulsion, exposure, camera lens, camera adjustment, camera vibration and film processing. Resolution is measured by examining a microfilmed resolution test chart under a microscope to determine the smallest pattern is which lines can be distinguished both horizontally and vertically.



Splicing

Splicing is only performed on roll microfilm. The reasons for splicing microfilm are either to correct substandard microimages or to combine on one roll groups of images that were microfilmed at different times on separate rolls. Since roll film retrieval devices search the microfilm at high speeds, it is important that splices be strong and not have rough edges.

PROTECTION

Storage

in order to have archival microfilm, microfilm with images that will last indefinitely, certain storage conditions must be met. The relative humidity must be between 30-40% and the temperature must not exceed 70° F. These conditions must be met 24 hours a day, seven days a week. Different types of film; i.e., silver, vesicular, should not be stored in the same cabinet because there may be interaction.

Security

In order to protect microfilmed records from possible loss or destruction a duplicate microform may be created and either the master microfilm or the duplicate may be stored in a fire and theft protected facility. Usually one of the sets of microforms is stored at a different location than the other.

LEGALITY

In general, microforms are legally admissible in court and by regulatory authorities. There are some basic requirements that must be met however. The microforms must be produced as part of the ***regular course of business.*** This means that an organization should have a written policy covering their micrographic program. The microimages must be ***satisfactorily identified.*** This means that the microform must be adequately labeled with dates, numbers, etc. to clearly identify the document being submitted in evidence. Lastly, you must be able to show that your micrographic system is ***accurate, reliable and trustworthy.***

Legal vs. Archival vs. Quality Control Requirements

Each of these sets of requirements are separate but related. Three examples illustrate the potential complexity of the situation.

First, many regulations call for production of archival film. Achieving archival quality, however, does not assure acceptance of that film in a legal proceeding. Conversely, microfilm that satisfies all of the legal requirements of a court or regulatory proceeding may not be archival.

Second, micrographic quality controls such as density and resolution tests are an essential part of producing good microfilm. Although strongly recommended, quality controls are not necessarily mandatory to admit microfilm in a legal proceeding. Micrographic quality controls are desirable from a legal standpoint because they strengthen the credibility of the micrographic system. Quality microforms helps establish that the system is accurate, reliable and trustworthy and thereby enhances the acceptance of the microforms.

Third, in many instances archival requirements are stipulated in the laws and regulations to denote excellence in the quality of the microfilm, not necessarily to ensure that the filmed records last indefinitely. It must be noted that excellent quality microfilm does not necessarily have to be archival. The ultimate acceptance of microfilm in a legal proceeding is not conditioned upon whether or not the film is archival.

MICROFORM HOUSING

Information is useless if you don't have access to it! Executives depend on information for decision making, yet information that needs to be available immediately is so often difficult to access. If you can't find this information, your company may not sell its product, you can't satisfy your customer and you can't manage your inventory. That's not a good way to run a business!

No matter what microform documents are is stored on. the most valuable asset to an accounts receivable clerk, or a customer service representative, is a well-organized file system that is properly managed and can retrieve vital information as quickly and easily as possible.

With the increasing use of microform readers and reader-printers, the storage and retrieval of microfilm has grown in importance. It doesn't matter how sophisticated your current retrieval device is, i.e., a computer assisted microform retrieval (CAR) system, the storage cabinets or quick access files located in the work area or on the work desk is what is required for efficient retrieval.

There are various types of storage files to help organize and protect the information on microfilm.

Microfilm Storage Cabinets

File cabinets must be designed for the weight and stresses of microfiche, cartridges or aperture cards. Cabinets in use for many years must last, especially when active files are continually opened and closed over a long period of time.

Start small and expand as more capacity is needed. Most storage facilities are expandable and can be customized to meet specific needs.

Vertical cabinets **are available in sizes from five to twelve drawer units. An 11-drawer cabinet is only 52" high and a 12-drawer unit is 56" high. Both designs allow the average person excellent visibility of all drawers.**

Lateral cabinets **are also available in sizes from five drawers to twelve drawers. A special feature to look for here is an interlock, which permits only one drawer to be opened at a time.**

Cross-file cabinets **are used to bring a file to your workstation. It is a built in component of your work desk, much like a standard desk drawer.**

If your microfilm files are inactive, you may want to user taller or stacked cabinets. Or, a microfilm storage system may contain a combination of microforms. For example, a 10-drawer cabinet can contain four fiche and six roll film drawers.

Look at the gauge of the steel. This will determine the strength and durability of the cabinet. Look for leveling glides on all four corners of the cabinet. Easy gliding drawers are also important.

Other features in the drawers could be A *plastic compressor* **which holds boxes and cartridges in place and "reserves" the space of a removed box to facilitate its return.** *Control plates can* **provide a "working V" to keep fiche from slipping.**

Roll Film / Cartridge Carousels

A stackable desk top carousel can hold up to 144 cartridges and can be added onto as the collection grows. A larger carousel can house up to 800 cartridges to provide file sharing at work stations or at central file areas for multiple users. Such a unit has four rows per side and the cartridges all have easyto-read index labels.

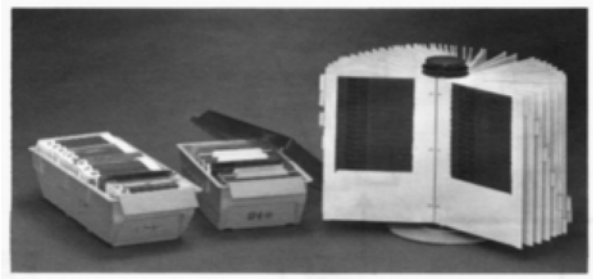
Roll Film / Cartridge Shelving

This shelving is ideal for "quick access" filing for 16mm cartridges. The user can scan 300 to 400 cartridges at a glance. The cartridges lie horizontally, making the index labels easily visible.

Microfiche Trays

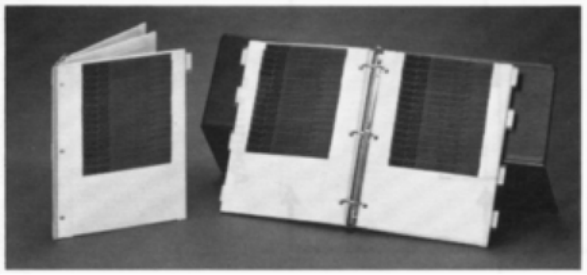
Microfiche trays are a "natural" for desktop referencing near a microfilm reader or reader-printer. some trays have a non-magnetic fanning feature allowing the user to view a full half-inch of each fiche. The user also gets the finger space necessary for easy retrieval. Plastic dividers protect the fiche.

Twelve-inch trays can accommodate 270 fiche and 16" trays can house 400 fiche. High density trays can take more -- 1,600 fiche or even 2,200 fiche.



Panel Systems

Panels in a rotary file are also ideal for desk-top referencing at the retrieval station. The fiche simply slip in and out of the pockets in the panel. 8-1/2 x 11 inch panels accommodate **32** or 40 pockets for microfiche. Panels are also available in three ring binders. A 1-1/2 inch binder can house 10-12 panels.



Automated Files

These provide instant access to all microforms. The automated unit houses trays on individual carriers that never need to be removed to gain access to any film record. Each carrier tray holds approximately 1,000 jackets, 2,000 fiche, 22 rolls or 1,500 aperture cards. There can be 11-13 trays in a carrier and from 9-14 carriers in a unit. A computerized fife control system can be combined with a customized storage unit to instantly show the availability of any file and/or indicate where the file is currently being used.

COMPUTER ASSISTED RETRIEVAL

The phrase computer assisted retrieval (CAR) denotes a document storage and retrieval system that uses computer hardware and software to index, cross-reference and assist in locating document images recorded on any media. CAR systems use data base management software to create, maintain, retrieve and manipulate machine-readable records that contain the index or bibliographic information providing pointers to document locations. While computer assisted retrieval concepts can be applied to paper documents and to digitized document images recorded on magnetic tape and discs, optical disks or any media, CAR is generally known as a system using microforms to store the documents with data processing techniques providing the index for quick retrieval. The computer used in CAR systems may be a micro, mini or mainframe. There are three levels of CAR systems, as follows:

1. Basic - Manual System

- Tray of microfiche, jackets or aperture cards
- Microcomputer
- Off-the-shelf data base management software
- Flat microform reader

2. Semi-Automatic System

- Cartridge 16 mm film in carrousel
- Micro, mini or mainframe
- Special application software
- 16 mm film retrieval unit
- No physical connection between computer and film retrieval device

3. Automatic System

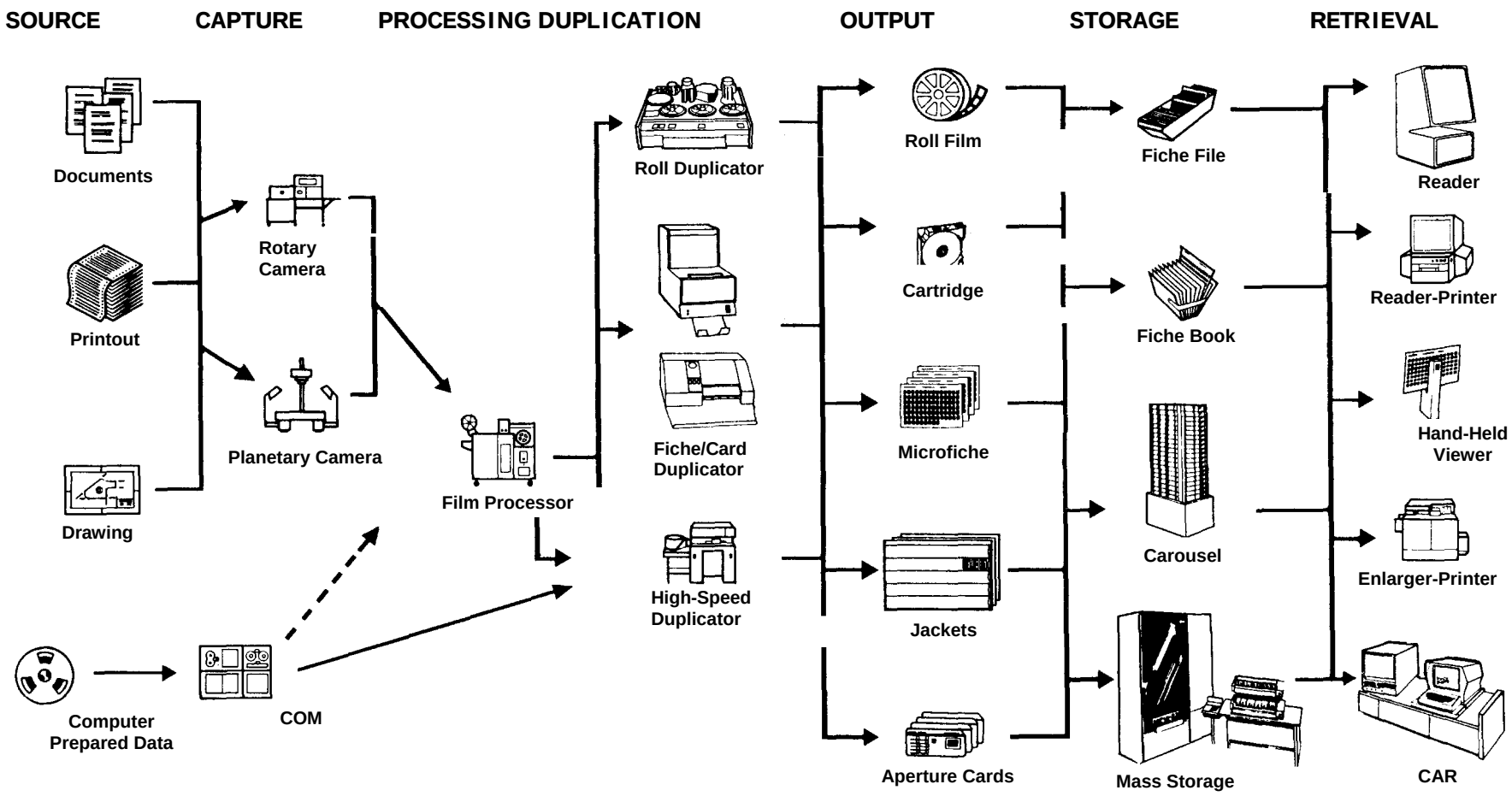
- Cartridges of 16 mm film in a jukebox or flat microforms in an automated retrieval unit
- Micro, mini or mainframe
- Special application software
- Cable or network connecting components
- Signal from terminal to computer to jukebox -document displayed at the users desk automatically

These CAR systems all use microforms to store the documents and magnetic media for storing the indexing data. The most important element in these systems is the software which is available as "off-the-shelf" prewritten packages or it may be customized to the users specific requirements. These data base management software programs are available from either micrographics or data processing vendors.

In most cases, a CAR system's initial response to a retrieval command is a report of the number of documents that satisfy the request. The operator can then broaden or narrow the search. When an appropriate number of relevant documents have been identified, data base records (indexing information) are displayed for operator review. While some CAR systems simply display the microform address, the more versatile software packages give more information; i.e. document date, author, type of document. *Once* the displayed list of records are examined and the microform locations determined, the microimages of the documents can be retrieved, displayed and hardcopies produced if required.

CAR systems use micrographics and data processing in a complementary manner. These two technologies operating together are stronger than either functioning alone.

Micrographic Systems Flowchart



As indicated on the preceding pages there is a micrographic system that can be designed to meet your organizations specific applications. This chart brings the various components together to show the logical flow of a total micrographic system.

One of the essential elements in analyzing the economics of any system involving the purchase of equipment is *depreciation.* There are several ways of figuring depreciation. One is the *cash-flow method,* which is influenced by income tax laws and which treats annual cost in a nonlinear fashion. The other is the *straight-line approach.* Both spread the expenditure for purchase of equipment over a period of time representing the anticipated useful life of the equipment. For a general assessment of system feasibility, the less involved straight-line approach usually will suffice.

Another important factor in the economics of a micrographic system is *maintenance* cost. As a general rule, the anticipated annual maintenance cost may be figured as 8 to 10 percent of the purchase price of the equipment. When equipment is leased or rented rather than purchased, the maintenance usually will be included in the rental or lease fee.

The remaining primary considerations are *floor space* and, of course, *labor.*

As a general guideline, annual costs for floor space can range roughly from $10 per square foot in rural areas to $100 per square foot in metropolitan areas. These figures usually are "loaded" with; taxes, depreciation, lighting, heating, grounds maintenance, etc.

As for labor per se, an accurate appraisal of the savings that can be expected through the application of micrographics may require a time and motion study of the present operation. The study results, along with what is known of the capabilities of the types of micrographic system being considered, should yield a fair picture of what can be expected in labor savings.

Among the specific questions that need to be answered concerning the labor factor are the following:

1. What are the present steps required to enter a new document into the file? How does this compare, in terms of time consumed, with the micrographic approach?
2. What is the present turnaround time for manually retrieving a specific document? How does it compare with what can reasonably be expected if the same document were filed more conveniently in microform? For example, how much less walking time would be involved for a file clerk?
3. What is the present time required for *refiling?* How does it compare with what could reasonably be expected if the same document were filed in microform?
4. To what extent are retrieval and refiling delays incurred by previous misfiling of documents under the present system?
5. To what extent is the present file accessed simultaneously by more than one person? To what extent does this result in retrieval and refiling delays?
6. What are the possibilities that the micrographic approach would permit more convenient locating of the file? What might this mean in terms of "travel" time, within or between premises, by those who must access the file regularly?

Although it is customary to reduce all system expenditures to the common denominator of annual costs that are repeated over the course of several years, it is well to distinguish separately those that will remain in force for the life of the system; i.e., (1) file maintenance costs; (2) space costs; (3) labor; (4) materials; and (5) equipment rentals.

Analyzing an operation and formulating a detailed plan to make that operation more efficient can be a big job. But, no matter how thorough and painstaking the task, there is always one final, crucial step required to see it through to fruition, namely, convincing the right people that the necessary funds should be provided for implementing the proposed system.

Likely Questions

"Why is this particular system being proposed at this time?" That is the logical first question to be anticipated in preparing the report, and inherent in that question are others: "What is the nature of the present system, why is it unsatisfactory?" and "What alternatives were considered?" The first ground to be covered by the proposal, therefore, is the present mode of operation and why it needs revision.

Essential Points

Besides describing the present system, explaining why it must be changed and analyzing the alternatives considered, the proposal must clearly identify the new system's objectives and the advantages it offers over the present system. Obviously, one of the more effective selling points for any system is its potential to effect real savings, and that is, in fact, the basic objective of most system proposals.

Other possible objectives of a proposed micrographic system might be: (1) to gain space to permit lengthening retention periods, (2) to facilitate document retrieval to speed up turnaround on customer queries, (3) to create a duplicate file as insurance against loss by disaster and (4) to improve file integrity. None of these are directly savings-related in an economic sense, but all are perfectly valid as objectives on which to sell a system.

Finally, the end objective of the system must not only be a practical one, but should be a pervading influence on every point made throughout the proposal. The fact that the use of micrographics is being proposed should be considered secondary to the end objective, which should strictly concern the need for Improvement in present operations or the realization of definite benefits from the adoption of a new capability.

Proposal Format

The following list of basic sections of a typical proposal will serve as a guideline in organizing the final draft.

- *Introduction:* Tell the reader, what the proposal covers.
- *The present system:* Describe, in appropriate detail the system that is being modified or replaced.
- *The problem:* Why is the present system being reassessed at this time?
- *The alternatives:* Give results of studies; discuss potential solutions that have been considered.
- *The proposed system:* Describe in detail.

  Economics: What will the new system cost? •
- *Recommendations:* Detail the funds needed, equipment to be purchased, implementation schedule, etc.

Service bureaus daim the following reasons users should consider their services:

- high speed and volume equipment
- trained and experienced staff
- provide the space to do the job
- knowledge of industry standards
- reduced down time due to more equipment and larger staff
- can provide a turnkey system
- can eliminate or reduce capital investment
- costs are more predictable

Before selecting a service bureau, a preliminary investigation of both micrographics and the potential system requirements is imperative. The potential service bureau user should decide in advance what requirements a micrographic system for his organization must meet in order to be effective, then a service company may be selected with those needs in mind.

Once it has been decided that a service bureau is needed, bids should be obtained from a number of service companies. After obtaining bids from various companies, the user should conduct the following investigation:

- Tour the service bureau's facilities.
- Investigate reputation and financial strength.
- Determine its reliability in meeting schedules.
- Preserving the integrity and privacy of its clients records.
- Determine the expertise of personnel and quality of work.
- Contact other customers for recommendations.
- Consider the physical location of the service bureau.
- Analyze costs.

Touring the Service Bureau's Facilities

The tour of the service company's facilities should reveal whether the company is run as a production operation and whether it has all the equipment it claims. The facilities should be clean and orderly, although not necessarily elegant. During the tour it should be easy to observe whether the service bureau personnel are working in an environment that is conducive to efficiency and quality output and whether the clients' records are handled with care. The user should also be prepared to ask if the company follows the latest standards.

Reputation and Financial Strength

The service bureau should supply a list of references, of its clients. If possible, a Dun & Bradstreet rating for the company should be obtained. When estimating financial strength, the user should also consider how long the company has been in business.

Reliability

Most service companies are acutely aware of each client's need for privacy and take the necessary precautions. The user's records must be protected from loss or damage and after they are filmed, the service company should have some means of adequately disposing of the documents if they are not to be returned to the customer. Unacceptable film should also be destroyed. If company records are sensitive, paper shredders should be used. The service company should have a security and fire alarm system and should also be bonded or insured against loss of documents by theft, fire, etc.

Expertise of Personnel

A service bureau should employ micrographic specialists who have had several years of experience. It should have trained operators and qualified supervisors for all microfilming processes it offers. If consulting services are offered, its consultants should be experienced in systems design.

Quality

One of the most important factors to ascertain about a service bureau is the quality of its work. The contract with the company should state specifically that the microfilm must be able to pass specific tests. Poor resolution of images will limit readability, and low contrast may hinder reproduction of the microform at a later date.

The bureau's inspection and quality control department should be equipped with both trained personnel and equipment to perform the following tests and inspection of processed film:

- Visual checks of film for any obvious defects, using a lightbox with rewinds;
- Measurement of film density with a properly calibrated densitometer;
- Inspection for reduction consistency and accuracy;
- Microscopic inspection for image resolution;
- Residual thiosulfate testing using the methylene-blue test.

Services / Specialty

A service bureau may specialize in one type of microfilming and in one or several types of clientele. It may offer consulting services and it may act as an equipment distributor.

Many service bureaus tend to concentrate on one or two microfilm areas and, consequently, they usually appeal to a particular type of clientele. If the company is experienced in the user's particular field, then the service bureau staff will be familiar with the kinds of problems that may arise, and they will already have tried-and-true solutions.

Location

The service bureau should be located within a reasonable distance so that transportation costs are not excessive and so that turnaround will not be adversely affected by travel time.

Cost

The user should beware of companies that offer very low prices. These companies may be financially unstable and attempting to secure business by not providing adequate value. The company should not, of course, charge exorbitant rates.

Conclusion

To summarize, the proper selection of a microfilm service bureau requires some knowledge about micrographics itself and industry practices. The user who is specific about his needs and prepared for observation and inquiry will be able to select the most appropriate service bureau capable of handling his needs adequately and economically.

APPLICATIONS

Micrographics is making the storage, retrieval and dissemination of vast quantities of information and computer output possible with speed, efficiency and economy not previously attainable. It is a modern way of keeping pace with today's voluminous records and information requirements.

The widespread applications of micrographics are virtually limitless. Probably the greatest advantage of micrographics lies in its flexibility. For nearly every application or requirement, there is a system and a microform to meet the need. Now that you've seen the characteristics and features of micrographics, let's examine some of its direct uses.

Banking

Behind the scenes microfilm is now at work in many local banks, helping personnel to be more efficient, more productive and more accurate. Monthly statements that used to involve tons of computer printouts now are converted directly from the computer onto microfiche. A single document or the complete reconstruction of any transaction may be projected on a reader for momentary consultation or for printout of a hardcopy copy ...in seconds.

Engineering

Engineers and scientists are placing increasing reliance on microfilm to resolve the seemingly endless problems of filing, retrieving, copying and changing large engineering drawings. Now such documents are kept on aperture cards which can be used in automated retrieval systems. They are convenient for handling and viewing and for producing hardcopies.

Micrographics has introduced a technique to the engineering field through the capabilities of computer output microfilm (COM). With COM, engineers can combine alphanumerics and graphics on one microfilm frame to produce circuit diagrams, scientific plots, maps, and even automated movies.

Consumer Services

Major oil and credit card companies maintain their consumer accounts on microfilm. One such company with over 4 million card holders has cut information retrieval time for customer service down to 20 seconds by using microfilm. Such systems provide better service, added protection and substantial cost savings.

Micrographics is doing a dynamic job for retail stores. A growing number of companies handling appliance and automobile replacement parts are now using microfilm for speedy, up-to-date reference. Through microfilm, this cataloged information is now relatively inexpensive for manufacturers to produce and distribute.

Law Enforcement

Increasingly, police departments are finding micrographics helpful in criminal investigations. An apprehended suspect's fingerprints can be displayed on a reader and compared with those of sought offenders. Also, "mug shots" of wanted persons can be electronically retrieved from files to aid in identification by witnesses and victims of crimes.

Insurance

Like the banking and financial communities, insurance companies with microfilm systems put millions of day-to-day inquires on call almost immediately. The indexing of policy numbers for faster retrieval and computer-generated internal reports, including payment histories and policy status records, can all be stored on microfilm.

Medicine

In cases of illness or accident, micrographics is there to help you, tool Hospitals are placing entire patient records on microfilm, reclaiming storage space urgently needed for other purposes and greatly reducing costly retrieval time. With microfilm, doctors can look up vital patient records almost immediately.

County Records

If you have visited your county clerks office recently, you've probably seen micrographics at work. Now, with microfilmed records, titles searches and similar activities are easily made and hardcopies provided in minutes. One convenient roll of microfilm has replaced three of the traditional and cumbersome bound volumes.

Libraries/Education

With micrographics in use at most libraries and schools, it is now commonplace to read an entire newspaper file without touching anything but a few simple controls. Books, trade papers, abstracts, reference materials, technical bulletins and similar documents can be retrieved from microfilm for ease in viewing and making copies. With the emergence of micropublishing, modern libraries can acquire, exchange and disseminate rare volumes and documents on microfilm. This permits their contents to be widely available without endangering the precious originals.

Consumer Business

One of the major problems repairmen had in the past was finding the nomenclature and description of broken parts by thumbing through thick catalogs. Now, many repair agencies use microfilmed catalogs to locate information in just seconds. Some firms have even equipped their service vans with portable microfilm libraries.

Maintenance on a grand scale, like the giant Boeing 747 jumbo jets, uses the same principles of micrographics. Micrographics fills the daily need to disseminate information worldwide concerning the operation and maintenance of these aircraft. Portable microfilm readers are used right at job sites.

Micrographics Tomorrow

Micrographics is the modern way to assimilate and disseminate the ever-increasing supply of vital documents we all need to keep moving ahead. Micrographics works well with other information technologies such as, facsimile systems, electronic imaging, Computer Aided Design (CAD).

GLOSSARY

ARCHIVAL QUALITY ... The degree to which a processed film will retain its characteristics during a period of use and storage. The ability to resit deterioration for a lengthy, specified time.

CAMERA, PLANETARY... A type of microfilm camera in which the document being photographed and the film remain in a stationary position during the exposure. The document is on a plane surface at time of filming.

CAMERA, ROTARY ... A type of microfilm camera that photographs documents while they are being moved by some form of transport mechanism. The document transport mechanism is connected to a film transport mechanism and the film also moves during exposure so there is no relative movement between the film and the image of the document.

CAMERA, STEP-AND-REPEAT . . .A type of microfilm camera which can expose a series of separate images on an area of film according to a pre-determined format, usually in orderly rows and columns.

CARD-TO-CARD PRINTER ... A type of equipment which produces duplicate card mounted microfilm by contact printing.

COM... Computer output microfilm: microfilm containing data produced by a recorder from computer generated electrical signals.

CONTACT PRINTING ... A method of printing in which the unexposed stock is held in direct contact with the master or intermediate bearing the image to be copied.

COPY ... (1) Noun---Duplicate (deprecated in that sense). The product obtained from reproducing an original (2) Verb--- To produce an original by hand or by machine.

DENSITOMETER ... A device used to measure the optical density of an image or base by measuring the amount of incident light reflected or transmitted.

DENSITY, BACKGROUND ... The opacity of the non-information area of an image.

DIAZO MATERIAL ... A slow print film or paper, sensitized by means of diazonium salts, which subsequent to exposure to light strong in the blue to ultraviolet spectrum and development forms an image. Diazo material generally produces nonreversible images, i.e., a positive Image will produce a positive image and a negative image will produce a negative image.

DIRECT IMAGE FILM ... A film that will retain the same polarity as the previous generation or the original material; that is, tone for tone, black for black, white for white, negative for negative, or positive for positive with conventional procession.

DRY SILVER FILM . . .A non-gelatin silver film which is developed by application of heat.

DUPLICATE ...(1) Noun---In microcopying, a copy usually made by contact printing from a master or an intermediate. (2) Verb--To make multiple copies of a document, usually with the aid of a master.

EMULSION . . . A single or multi-layered coating of gelatinous material on a transparent base carrying radiant energy reactive chemicals that create a latent image upon exposure. Processing techniques produce a final, visible, usable image.

ENLARGER-PRINTER ... A machine which projects an enlarged image from microfilm, develops, and fixes the image on a suitable material.

FILM ... Any sheet or strip of transparent plastic coated with a light-sensitive emulsion.

FRAME (FILM FRAME) ... The area of a photographic film exposed to light in a camera during one exposure, regardless of whether or not this area is filled by the document.

GENERATION . .. A measure of the remoteness of a particular copy from the original material. The picture taken of a document, cathode ray tube, etc., is termed first generation microfilm (camera microfilm). Copies made from this first generation are second generation etc. (See NEGATIVE APPEARING IMAGE, POSITIVE APPEARING IMAGE)

HARDCOPY ... An enlarged copy, usually on paper.

IMAGE... A representation of an object such as a document or other information sources produced by light rays.

MAGNIFICATION . . . The linear ratio of the size of the image to that of the object when viewed through or projected by an optical instrument.

MASTER ... A copy of a document, or in some processes, the original itself from which copies can be made.

MICROFILM ... A fine-grain, high resolution film containing an image greatly reduced in size from the original.

MICROFORM ... A generic term for any form, either film or paper, which contains microimages.

MICROGRAPHICS ... That which has to do with the creation and use of microimages.

MICROIMAGE ... A unit of information, such as a page of text or a drawing, too small to be read without magnification.

MICROPUBLISHING . To issue new (not previously published) or reformatted information, in multiple copy microform for sale or distribution to the public. (See MICROREPUBLISHING, DUPLICATE)

MICROREPUBLISHING ... To re-issue material previously or simultaneously published in hard copy form in multiple copy microform for sale or distribution to the public. (See MICROPUBLISHING, DUPLICATE)

MOUNTER . . . A device for simultaneously cutting, positioning, and fastening film frames in aperture cards.

NEGATIVE APPEARING IMAGE . . . A photographic image with light lines, characters, and neutral tones on a dark background.

ORIGINAL . . . The document from which copies are produced.

POLARITY . . . A word used to indicate the change or retention of the dark to light relationship of an image, i.e., a first generation negative to a second generation positive indicates a polarity chage while a first generation negative to a second generation negative indicates the polarity is retained.

POSITIVE APPEARING IMAGE . . . A photographic image with dark lines, character, and neutral tones on a light background.

PRINT ... (1) Noun---A reproduction or copy on photographic film or paper. (2) Verb--To produce a reproduction or copy on photographic film or paper.

PROCESSING . . . The treatment of exposed photographic material to make the latent image visible, i.e., for silver emulsion films, a series of steps consisting of developing, fixing, washing, and drying.

READER . . . A projection device for viewing an enlarged microimage with the unaided eye.

READER-PRINTER . . . A machine which combines the functions of a reader and an enlarger-printer.

REDUCTION ... A measure of the number of times a given linear dimension of an object is reduced when photographed, expressed as **16X,** 24X, etc.

RESOLUTION .. . The ability of optical systems and photomatterials to render visible fine detail of an object; a measure of sharpness of an image, expressed as the number of lines per millimeter, discernible in an image.

ROLL-TO-ROLL PRINTER . . . A type of equipment for producing duplicate rolls of microfilm by contact printing.

SILVER FILM . . .A film which is coated with a silver halide emulsion.

SILVER HALIDE . . .A compouund of silver and one of the following elements known as halogens: chlorine, bromine, iodine, fluorine.

STRIP MICROFILM . . . Short pieces of film usually produced by camera-processors for insertion in jackets.

UNITIZE . . . (1) The separation of a roll of microfilm into individual or related frames and insertion in a carrier. (2) To microfilm on one or more sheets of microfiche a unit of information, such as a report, a specification, or a periodical.

UPDATABLE MICROFILM ... A microform that permits the addition or deletion of images.

VESICULAR FILM . . . Film which has the light sensitive element suspended in a plastic layer and which upon exposure creates strains within the layer in the form of a latent image. The strains are released and the latent image made visual by heating the plastic layer resulting in the formation of minute bubbles or vesicles. The image becomes permanent when the layer cools.

Associations

Association for Information & Image Management (AIIM)
1100 Wayne Ave.
Silver Spring, MD 20910
Phone: 301-587-8202 FAX 587-2711

Association of Records Managers and Administrators (ARMA
4200 Somerset Dr.
Prairie Village, KS 66208
Phone: 800-422-2762

Nuclear Information and Records Management Association (NIRMA)
80 Eighth Ave.
Suite 303
New York, NY 10011
Phone: 212-683-9221

Serial Publications

AIIM newsletter, see above

Inform, AIIM magazine, see above

Intl Journal of Micrographics & Optical Technology
Pergamon Journals
Maxwell House
Fairview Park
Elmsford, NY 10523
Phone: 914-592-7700

The Micrographics Newsletter
P.O. Box 950
Larchmont, NY 10538
Phone: 914-834-3044

Records Management Quarterly, AIR MA journal, *see* above

Non-Serial Publications

Intl Imaging Source Book
Microfilm Publishing Inc.
P.O. Box 950
Larchmont, NY 10538
Phone: 914-834-3044

Information Management Source Book
Published by AIIM, see above

Micrographic Systems, 3rd Ed. by William Saffady
Avedon Associates, Inc.
14 Accord Ct.
Potomac, MD 20854
Phone: 301-983-0604 FAX 983-0813

Legality of Microfilm by Robert F. Williams
Cohasset Associates, Inc.
505 North Lake Shore Dr. #3806
Chicago, IL 60611
Phone: 312-527-1550

Resource Center, at AIIM Headquarters, see above

ALTEK SYSTEMS

An Allied Technology Company

Dear Readers:

In 1978, when ALTEK SYSTEMS got into the micrographics business, little did we know about the changes that the next 18 years would bring! Today, we are offering digital as well as micrographic solutions to record handling problems. One thing we constantly hear is that BOTH micrographics and digital work well for different applications. Digital imaging offers speed of retrieval and convenience, for example, micrographics provides permanence, migration path, economy, and space savings.

The micrographics story is a story worth telling and two prominent authors, Don Avedon and Rodd Exelbert have done an excellent job with "All About Micrographics". This booklet contains 14 quality chapters that cover all key aspects in our business—applications, retrieval products, storage, criteria for service bureau selection, and also includes an invaluable glossary of terms.

"All About Micrographics" is both for experience users (I learn something each time I leaf through it) and people who are new to micrographics applications and media. There is a treasure trove of information in this booklet. We at ALTEK SYSTEMS are proud to be able to provide you the information to put the "photographic memory" of micrographics to work in your business.

Sincerely,

Jim W. Harvey
President

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